

The Mining Journal

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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LONDON, SATURDAY, SEPTEMBER 13, 1884.

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150 Chontales, 4s. 3d.

80 East Wheel Rose, 2s 6d

60 Eberhardt, 4s. 9d.

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20 Devon United, 5s. 6d.

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5 Dolcoath, 47s.

60 East Blue Hills, 4s. 9d.

25 Ecton,

BRITISH ASSOCIATION FOR ADVANCEMENT
OF SCIENCE.

THE MONTREAL MEETING.

BIOLOGY SECTION.

The reports of the several committees in this section contained, as usual, a vast amount of valuable information. At the Southport meeting Dr. Carson read a short account of the crania (now in the British Museum) brought from Larat by Mr. Forbes, which has been published in *extenso* in the Journal of the Anthropological Institute, and which concludes with regard to the relation of the inhabitants of Timor Laut to those of adjacent countries:—"That the skulls just described are not those of a pure race is very evident. Two very distinct types can be made out—the brachycephalic and the dolichocephalic, the former greatly predominating in number. Both from the information Mr. Forbes has given us as to their appearance, and from the skulls themselves, there is no difficulty in recognising a strong Malay element in the population. The male skull No. 4, and the female No. 6, are typically Malayan in their characters, especially in possessing large, open, rounded orbits, and smooth forehead, the superciliary ridges and glabella being almost entirely absent. The other brachycephalic skulls, though not presenting such a striking affinity, agree more or less with this type, but give evidence of mixed characters. The dolichocephalic skull is, on the other hand, markedly of the Papuan type, and corresponds so closely as to be undistinguishable from two crania obtained 20 miles inland from Port Moresby, New Guinea, in the College of Surgeons' Museum, also from another from the Solomon Islands. Along with this form of skull, Mr. Forbes informs me, is associated frizzly hair and dark skin. The examination of the cranial characters of the inhabitants of Timor Laut, as illustrated by the skulls before us, shows that the peopling of this island is no exception to what is usually found in the various groups of islands in the Polynesian Archipelago. From its close proximity to New Guinea, perhaps more of the Papuan element might have been expected."

The general report of the Committee on the Migration of Birds comprises observations taken at lighthouses and light-vessels, as well as at several land stations, on the east coast of England, the east and west coasts of Scotland, the coasts of Ireland, also the Channel Islands, Orkney and Shetland Isles, the Hebrides, Faroes, Iceland, and Heligoland, and one Baltic station on the coast of Zealand, for which the committee is again indebted to Professor Lütken, of Copenhagen. Altogether 158 stations have been supplied with schedules and letters of instructions for registering observations, and returns have been received from 102. The observations taken on the east coast of Great Britain in 1883 have been such as generally to confirm the conclusions arrived at in former reports, having reference to direction of flight and lines of migration. The winter of 1883-4 has been exceptionally mild, and there has been an almost entire absence of severe frosts and lasting snowstorms. The prevailing winds in the autumn, west and south-west, such as observation shows, are most favourable for migrants crossing the North Sea, and continuing their journey inland. Winds from opposite quarters to these tire out the birds, and cause them to drop directly they reach land. In Ireland the number of migrants in the autumn seems to have been more than usual. A great rush of thrushes (including probably redwings), blackbirds, and starlings took place at the south-eastern and southern stations between Oct. 25 and Nov. 2—dates which agree with the great rush on the east coast of England. The bulk of the immigrants appear to arrive on the south-eastern coast of Ireland, excepting such birds as the bernicle goose and snow bunting, which are mainly recorded from north-western stations, and rarely entered in schedules from the east or south coast. An interesting feature this year is the occurrence of several examples of the Greenland falcon on the west coast, no less than eight having been shot at various points from Donegal to Cork and one Iceland falcon at Westport. Of the enormous immigration which crosses our east coast in the autumn, either to winter in these islands or merely on passage across them, a small proportion only appear to return by the same routes. What is called the "first flight" of the woodcock arrived on the Yorkshire, Lincolnshire, and Norfolk coasts on the night of Oct. 21. The "great flight" or rush, which covered the whole of the east coast from the Farnes islands to Yarmouth was on the nights of the 28th and 29th. These two periods correlate with the principal flights of woodcock across Heligoland. But few woodcock were recorded from stations on the east coast of Scotland, although at the Bell Rock lighthouse, on the night from Oct. 31 to Nov. 1, Mr. Jack reports an enormous rush of various species, commencing at 7 P.M. Immense numbers were killed, pitching into the sea. Mr. Harvie-Brown records a very great spring migration of woodcock, which appear to have crossed Scotland between the Clyde and the Forth on March 9, 10, 11, and 12, 1884. These were observed to be the small red Scandinavian bird, which are quite unmistakable and distinct from British-bred birds. Altogether there has been a very marked absence on our British coasts of rare and casual visitors. It is well known that large numbers of European birds, presumably driven out of their course, are seen during the autumn migration far out over the Atlantic, alighting on the ocean-going steamers. It is proposed by Mr. Harvie-Brown to supply schedules to the principal lines of ocean steam vessels for the better recording of these occurrences. It must be borne in mind that the immense and constantly-increasing traffic, which in these days bridges the Atlantic, and unites the Old and New Worlds, offers unusual chances for birds to break their flight, and ultimately, perhaps, to reach the American coast.

The characteristic feature of North American flora were discussed in a paper by Dr. ASA GRAY, the great American botanist, of Harvard University; and Prof. LAWSON, of Dalhousie College, Halifax, N.S., mentioned many British plants that were indigenous to America. There were interesting papers in this section "On Recent Groups of Echinoderms," by Prof. Marshall, and "On the Distribution of Minerals," by Dr. G. Dobson. In this he pointed out the remarkable resemblance between certain bats of the Australian and Ethiopian regions. From this it was apparent that some communication once existed between those continents. There probably had been a chain of islands between Australia and Africa, which had existed for a short period, by which route the bat had passed from one place to another. Bats were widely spread in Madagascar, Mauritius, and Australia, but there is only one species in India which shows a strong resemblance to the Madagascar bats. So it is evident that at no distant day they had common ancestors. It was, therefore, deduced that there must have been a chain of islands from Australia to Madagascar, and at a later period from Madagascar to India. On close examination he felt convinced that the Indian Ocean contained many submerged banks between Australia, Madagascar, and India.

GEOGRAPHY SECTION.

A general description of the territory under the government of the British North Borneo Company, from personal observations made during a residence of nearly three years, and from the official report of Messrs. Pryer, Von Donop, Frank Hatton, and Witt, was given in a paper by Mr. E. P. GUERITZ, who said that the territory lies between the 116th and 119th degrees of east longitude and the fourth and seventh parallels of north latitude, embracing an area of some 20,000 square miles, and a coast line of about 500 miles. A range of mountains, the general direction of which is north-east and south-west, forms a backbone through the heart of the country. Melaka attains an approximate height of 4000 ft., Mentapok, 7000 ft.; Trodan, 8000 ft.; and Kina Balu, 13,698 ft. From this range, and descending to the coast on either side, are lesser ranges of hills, covered for the most part with virgin forest, and interspersed with fertile plains watered by numerous rivers. The coast, as a rule, is low and flat. It is, to a large extent, lined with the casuarina tree, broken by stretches of mangrove, and diversified by low sandstone cliffs or patches of forest reaching to the water's edge. The country is rich in harbours, the most important being Gaya, Ambong, and Usikin on the west coast, Kudat on the north, and Sandakan on the east. The principal rivers are the Kimanis, Papar, Putatan, Abai, and Tampasak on the west coast, Paitan and Sugut on the north, and Sibico and Kinabatangan on the east. Most of these are navigable for steam launches of light draught, but the entrances

are more or less barred. The products of the country include tobacco, sugar, gambier (the inspissated juice of the *Uncaria gambir*), pepper, tea, coffee, sago, gutta-percha, and camphor. The author describes the Gomanton caves on the east coast, from which are obtained edible birds' nests to the annual value of \$25,000, and which contain an apparently inexhaustible store of guano, deposited both by birds and bats. The coal at present in use is procured from the Muara mines at the mouth of the Brunei river, but boring for workable deposits is being carried on within the territory of the company. Traces of gold have been found, and samples of silver, cinabar, antimony and tin. Mother-of-pearl, bêche-de-mer, and tortoise-shell, are also obtainable. The climate is said to be fairly healthy. The maximum monthly mean temperature during 1883 was 89.3, and the minimum 75.1. The rainfall at Kudat for the year was 120.56. November, December, and January are the wettest months. The population is estimated at 150,000.

ECONOMIC SCIENCE AND STATISTICS SECTION.

Although it is beyond question that reliance upon statistics frequently leads to very erroneous conclusions, they always bring forward interesting matters for consideration, and the President of the Economic Science and Statistics Section, Sir RICHARD TEMPLE, certainly chose a very attractive subject—"The General Statistics of the British Empire"—remarking that though statistics are fallible, yet the collation and presentation of them must be regarded as essential to political and economic knowledge. Indeed they are, figuratively, the backbone of information, and without them our knowledge would be invertebrate. Owing to the variety of sources from which the facts have to be drawn for an empire that is spread over the world, and owing to the magnitude of the figures which have to be produced, it will frequently be necessary to state the totals approximately and in round numbers. Again, owing to the largeness of the subject and the limitation of space, it will be impossible to do more than state the principal facts in the form of an abstract. Our statistics, then, will be grouped under the following headings:—(1) The area consisting of widely extended regions; (2) the inhabitants of these many lands; (3) the works of man as they are displayed in this vast theatre of action. First, then, the area of the British Empire may be set down at 8,650,000, or more than 8,500,000 of square miles. This area includes the countries which are directly recognised as the component parts of the Empire in Europe, in the East and West Indies, in Australia, in North America, in South Africa, and the possessions scattered among nearly all the regions in the world. Out of this total there are only 120,000 square miles in the United Kingdom. Then there are 1,500,000 square miles in India, and the remainder, or 7,000,000, belong to the colonies and to the scattered possessions.

But there are other regions which, though not belonging to the Empire, have yet fallen, or are falling, under its political control more or less, such as Egypt, including a part of the Egyptian Sudan, some districts in Southern Arabia, a part of Borneo, Zululand, the Transvaal, Afghanistan, and Beloochistan. The area of these additional regions may be set down approximately at 1,103,000, or about 1,000,000 of square miles, and this figure is probably somewhat below the reality. Thus the total area directly or indirectly under the authority of the British Empire may be taken at nearly 10,000,000 of square miles, or about one-fifth of the 50,000,000 of square miles composing the habitable globe. The dimensions of this Imperial area have been ascertained by professional surveys, of which the progress has kept pace with the expansion of the empire. Out of the grand total not less than 2,500,000 of square miles have been topographically surveyed, and of this nearly all has been surveyed minutely field by field. This cadastral survey, presenting the details of every field for a vast area, is to be reckoned among the largest operations ever known in the annals of administration. The remainder has been for the most part either partially surveyed or partially explored. A small portion, however, remains but imperfectly explored, or else almost unexplored. As might be expected in an empire whereof the real basis of power is maritime, the coast line is of an extraordinary length, to be measured by about 28,500 miles, with 48 large harbours; for the whole of this length marine surveys have been prepared. In an empire which lies at both sides of the Equator, and is scattered over both hemispheres, there are varieties of climate touching the extremes of heat and cold. Of the whole, about one-sixth is within the tropics, one-third in the antipodes, one-third in North America, and the remaining one-sixth in the temperate zone of Europe and Asia. But greatness does not depend on area alone, and there is a vast range in the scale of value for lands. For instance, it has been computed that the average letting value of land in the interior of England is several hundred times as great as that in the interior of Siberia. So in the British Empire there are wide tracts which may be important politically and prospectively, but of which the value cannot be measured by a statistical test.

Out of the 10,000,000 of square miles hardly one-fifth is cultivated or occupied in the widest use of the term occupation. The area, however, which is capable of being brought under cultivation, and of sustaining the future increase of population, must be regarded as enormous. It is chiefly in Australia and Canada, in which two divisions it may be reckoned at upwards of 2,000,000 of square miles, enough at the lowest computation to support 200,000,000 of souls. Even in India, which is popularly, though not quite correctly, supposed to be thickly populated, the cultivable waste is not less than 250,000 square miles. Then there is a residue which is uncultivable waste, and of which the dimensions cannot be precisely measured. It consists of mountains and forests, with some desert, in the heart of Australia. These mountains are among the greatest ranges in the world. The forests are very extensive, and their extent cannot be precisely stated. They are infinitely various both in respect of value and of condition, some being poor or half destroyed, others being rich and well preserved. But there are in the Empire about 100,000 square miles of forests which are being formally and professionally preserved to become a mighty source of national wealth. In the second place, respecting the inhabitants, the total population amounts to 305,000,000 of souls in those regions which are included directly in the Empire. If the countries already mentioned as more or less under political control were to be included then about 10,000,000 more would have to be added, bringing up the total to 315,000,000. This mass of humanity is composed of many diverse nationalities, among whom the primary distinction is that of race. There are 45,000,000 of the fair races; among these about 39,000,000 are Anglo-Saxons, including German colonists. 3,500,000 are Celtic (mainly Irish), 1,500,000 are French Canadians, 500,000 are Dutch in South Africa, and there are a certain number belonging to other nationalities, Scandinavians, Swiss, Greeks, but there are few from the Latin race in South Europe, and hardly any Russians. Again, of the 315,000,000 ethnically there are 45,000,000 of the fair or Caucasian race, 254,000,000 of the Aryan, and 5,000,000 of the Mongolian, the remainder belonging to the aboriginal races. A cardinal distinction between the several nationalities is that of religion.

Christianity, the religion of the dominant race, is professed by somewhat more than the 45,000,000 of the fair races above mentioned, but the total can hardly exceed 46,000,000 out of the 315,000,000—that is, one-seventh of the whole. The religion which includes the largest number is Hindooism. There are 188,000,000 of Hindoos, and it may indeed be said that the whole Hindoo race is subject to the British Crown. The Hindoos then form more than half of the total population in the Empire. Under the generic name of Hindoo, however, there are counted many thousands of Brahmos, who are really Theists, and there are 3,000,000 of Sikhs and Jains, closely connected with Hindooism. Then there are 50,000,000 of Mahomedans under the British Crown in India, and then there are 10,000,000 more in the Mahomedan countries connected with the British Empire—in all 60,000,000. This number exceeds the number of the Mahomedans belonging to any of the Mahomedan States, such as Turkey or Persia, and in fact comprise half the Mahomedan world. The number of Buddhists is not considerable, amounting to about 7,000,000, chiefly in Burmah and Ceylon, with some Chinese in Australia and other divisions of the Empire. Then there is a small remainder, about 7,000,000, consisting of Pagans chiefly, the Aborigines of the East Indies, including also the North American Indians, the Australasian natives, and of the African tribes of the Cape.

In the United Kingdom the proportion of urban to rural popula-

tion is large, being more than one-half already, and likely to increase to two-thirds. In England especially the majority of the people dwell in towns. At present a similar tendency is observable in Australia, where the people are mainly urban. But in the rest of the Empire the mass of the population is rural, a certain percentage only being urban. In India especially it is to be remarked that nine-tenths of the people are in villages, leaving one-tenth only for the towns. If the total population were spread over the total area of the Empire, the average would amount to only 33 persons to the square mile, which suggests a wonderful sparseness of population in a wealthy and prosperous Empire. The sparseness arises from the inclusion in the Empire of tracts, either uninhabited or but slightly inhabited, such as the Himalayas, the frigid regions in the North of Canada, a part of the Rocky Mountains, and the arid desert in the heart of Australia. Indeed, it were almost idle to reckon the average of the population in the total area in the Dominion of Canada, or in Australia. Even in India the general average amounts to only 144 to the square mile, nevertheless India contains some of the most densely populated districts in the world. In some Indian provinces a population to be counted by tens of millions, average from 300 to 400 the square mile; and in some Indian districts, with a population to be counted by some millions, the average rises to 800, even to 900 on the square mile. As is well known, England (as separate from Wales, Scotland, and Ireland) is the only part of the Empire which is densely peopled throughout, its average per square mile, 435 souls, being almost exactly the same as that of Belgium, the most densely peopled part of the Continent of Europe. Heretofore, under the first two headings, we may have wondered at the smallness of the proportion which the United Kingdom bears to the Empire in respect of area and population.

The British merchant navy consists of 30,000 ships, with 8,500,000 tons, manned by 270,000 sailors. The sea-going tonnage under the British flag amounts to 3,000,000 tons in steamers and 5,500,000 tons in sailing vessels. Now, under the flags of other nations there are 2,500,000 tons in steamers and 9,500,000 in sailing vessels. In other words, the British Empire surpasses all other nations together in respect of steamers, and nearly equals them in respect of sailing vessels. In respect of carrying power in the world by sea, 19 per cent. belongs to the British Empire and 51 per cent. to other nations. Again, out of 55,000 ships in the world over 100 tons 21,000 are British. The comparison remains in similar terms in respect to the earnings of shipping. Out of 129,000,000 tons carried yearly by the shipping of the world, 63,000,000 are under the British flag. Out of 133,000,000 sterling earned from freight and passengers by the ships of the world, 73,000,000 are earned by British ships. A similar proportion is shown by the port entries of the world, represented yearly by 125,000 tons, of which 57,000 (or nearly half) pertain to the British Empire. In shipbuilding the proportion is still more favourable to the British Empire. Out of 1,800,000 tons built annually, 1,200,000 are built in Great Britain. The total trade of the British Empire cannot be exhibited statistically, because the component parts of the Empire are separated by oceans. Consequently, much of the trade is between these parts, and it would be meaningless to sum up the several items into one grand total. If the aliquot parts of the trade of the principal nations be computed, then about one-fifth, or 21 per cent., of the whole belongs to the United Kingdom, and 13 per cent. to the colonies and dependencies. Thus, 34 per cent., or one-third, of the world's commerce pertains to the British Empire. The ratio of seaborne commerce per inhabitant yearly is 20l. in the United Kingdom, 31l. in Australia, 9l. in Canada, and 6l. in the United States. In Europe the British ratio is exceeded in Holland and equalled by Belgium, but in other European countries the ratio is far less. In respect to banking the United Kingdom is known to be the busiest on earth, and transacts one-third of the business of the world. The total of capital and deposits used in the banking of all nations amounts to 2,508,000,000 sterling, of which no less than 955,000,000 belong to the British Empire, representing a proportion of 39 per cent. But there is a considerable amount of capital employed by the native bankers of India, amounting to many millions sterling, of which the sum cannot be precisely stated. On the whole, it seems that considerably more than one-third of the banking business of the world is done within the British Empire. The same proportion is shown by the sum total of capital and deposits of the banks. From this it follows that the average per inhabitant in the United Kingdom is 25l., the average for the Continent of Europe being 4l., and that of the United States being 10l. The only country to be compared with the United Kingdom is Australia, where the average is 30l.

The manufactures of the United Kingdom are valued at 818,000,000 sterling annually. Those of the colonies are estimated at 59,000,000. The value of the Indian manufactures cannot be stated, but it must be large. The significance of this will be understood from the fact that a similar total for the rest of Europe gives 2,600,000,000. In general terms, it may be stated that British manufactures form one-third of those for all Europe put together. The great competitor, of course, the United States, where the value appears to exceed that of the United Kingdom. The American manufactures are, indeed, wonderful, not only in their present magnitude, but in the rapidity of their progress and in the prospect of their extension. Still, it is difficult to institute a precise comparison, because some items are included in their total which are not reckoned in the United Kingdom. Another test is that of factory steam-power; this power in the world is represented by 7,500,000 of horse-power. Of that total, 2,250,000, or about 30 per cent., are British. Again, it has been computed that if the main elements of national industry be taken together—commerce, manufactures, mining, agriculture, carrying trade, and banking—the total, 2,000,000,000 sterling and upwards annually, is about the same for the United Kingdom and the United States. But the United States are advancing the fastest, and are already passing ahead. Their population, however—55,000,000 of souls—is greater by 19,000,000 than the British 36,000,000. The aggregate of industries shows an average of 51l. per head in the United Kingdom, against 42l. in the United States.

The fact, then, that the United Kingdom, despite disparity of population, is still able to do nearly as much as its giant offspring, affords striking proof of sustained vitality in the mother country. It is inferable from this computation that the average of earnings per head in the United Kingdom is 35l. 4s., and exceeds that in the United States (24l. 4s.), and that in Canada (26l. 18s.). But it is actually exceeded by the average in Australia, which reaches apparently the amount of 43l. 4s. per head, and is the highest in the world. Still the rate of earnings in the new countries founded by the Anglo-Saxon race approximates to that of the mother land; but the average rate for the Continent of Europe is only 18l. 1s. In other words, the British rate is more than double. France is the only large European country which at all approaches the United Kingdom in this respect, and together with France may be classed the little countries of Belgium, Holland, and Denmark. It follows from these facts that the wealth of the United Kingdom in land, cattle, railways, and public works, houses and furniture, merchandise, bullion, shipping, and sundries, valued at 8,720,000,000 sterling, exceeds that of any European state, and is just double that of Russia. But it is exceeded by the corresponding figure for the United States—9,495,000,000 sterling. For the British Empire, however, must be added 1,240,000,000 for Canada and Australia, precisely computed on similar terms, and at least 2,500,000,000 for India and other dependencies which cannot be precisely computed, and which may be below the reality. Thus the wealth of the British Empire apparently stands at the truly grand total of 12,640,000,000 sterling, which justifies the old expression that this Empire is the richest state on the face of the earth.

Respecting education, there are 5,250,000 pupils at schools in the United Kingdom, 860,000 in Canada, 611,000 in Australia, and 2,200,000 in India, making up a total of 8,921,000 pupils in the British Empire. The number, though large absolutely, appears very small for so vast a population. The fact is, that in India, although education has made a remarkable progress within the last generation, yet the way to be made up was enormous, owing to the neglect of many centuries, and many children of a school-going age still remain out of school. The number in the United Kingdom compares moderately well with the Continent of Europe, but unfavour-

ably with some of the lesser kingdoms, where the progress is most satisfactory. But the comparison attains special interest when made with the United States, where a truly noble progress is exhibited, and where the number of pupils reaches to 10,000,000, the annual expenditure being 17,000,000. sterling. Doubtless the returns in the United States are more complete for the higher branches of education than in the United Kingdom, but that would not make any considerable difference in the comparison of such high figures as these. Thus the extraordinary fact remains, that in respect of educational statistics the United States are numerically in advance of the British Empire. The religious missions to non-Christian nationalities constitute a bright feature in the British Empire. The statistics of the Roman Catholic missions are not fully known, but their operations are very considerable. The income of the various Protestant missionary societies is hardly less than 750,000. sterling annually, and the number of European ordained missionaries maintained by them is about 900. This is exclusive of a considerable number of reverend missionaries employed within the British Empire by societies in the United States. The number of native Christians under their care, together with children at school, cannot be less than 1,000,000.

The report of the Committee for enquiring as to the teaching of Science in Elementary Schools states that since their reappointment at Southport no legislation affecting the teaching of science in elementary schools has taken place, and it is yet too early to estimate the whole influence of the Education Code of 1882 in that respect. Some indications, however, have been gathered from the Blue-book and from some of the large Boards. The first effect of the change of Code upon the teaching of science is shown in the return of the Education Department for this year, but as the tabulated statements only extend to Aug. 31, 1883, they contain merely the results of those examinations that were made of schools which came under the new Code between April 1 and Aug. 1, 1882, or about 28 per cent. of the whole. The following conclusions may be drawn:—First, elementary science was taken up by scarcely any schools examined during these months, the number of departments that took it up as the second-class subject being only 15, while 3988 took up geography, 1644 (girls) needlework, and 114 history. It must be remembered that geography is more scientific than it was before, but needlework is rapidly displacing it in girls' school; secondly, the exclusion of the fourth standard from instruction in specific subjects has reduced the number of scholars so taught by 56.6 per cent., but the remaining 43.4 per cent.—that is to say, the children in standards five, six, and seven, do receive a larger proportion of scientific teaching.

The Anthropometric Committee recommend that a small committee should be reappointed for the purpose of continuing and promoting the collection of anthropometric observations. Some important observations on eyesight are contributed by Mr. C. Roberts. Much unnecessary alarm has been caused in this country by the publication of observations made in Germany on the deteriorating influences of certain occupations, and especially of school and college life, on the eyesight of children and young persons. The statistics collected by the Anthropometric Committee, though not so numerous as could be wished, show that no such deterioration occurs in England, but, on the contrary, that between ages 10 and 40 years a slight improvement takes place, a result which might be expected from the operation of the physiological law that the function of an organ increases with its use. A table is given to show the relation which the two tests bear to each other when applied to the same individuals. The general disposition of the figures shows that the sight which is proved to be good by one test is good also by the other test; but there are some notable exceptions to this rule, a few of which are probably due to errors of observation. The table also shows the difficulty, already referred to, of drawing the line between good and imperfect eyesight. Judging from the value of the groups of figures, Mr. Roberts has separated the boys whose sight with No. 1 falls short of 12 in., and with No. 10 of 7 ft., as possessing imperfect eyesight, forming 8.2 and 16.7 per cent. of the total number respectively. Thus, 88.3 of the boys possess 7-10ths and upwards far sight, and 91.8 per cent. possess 12-12ths and upwards of normal near vision. Tested by the letters constructed of horizontal and vertical lines, 60.3 per cent. of the Marlborough College boys were found to be more or less astigmatic, 28.5 per cent. of the defect being horizontal and 31.8 per cent. vertical, while 39.7 per cent. were entirely free from the defect. The figures given show that there is a disposition for astigmatism to increase with age. Colour-blindness was found to exist among the Marlborough boys to the extent of 2.5 per cent.

MECHANICS SECTION.

The use of Secondary Batteries for Telegraphy was treated of in a paper by Mr. W. H. PREECE, who described successful experiments made with them in the London Post Office. They showed great economy over primary batteries or dynamos when used on a large scale. Domestic Electric Lighting was dealt with in another paper by the same author, in which he describes the fitting up of his own house, which has been done not so much to determine the cost as to discover faults, troubles, nuisances, and the amount of supervision necessary to keep it going. His house is really gas-lighted, but the gas is burnt in the garden where he extracts that which he wanted—light, and discharges harmlessly into the air what he does not want—poison. The gas-engine, dynamo, and fittings were described. He uses secondary batteries, of which he expressed a very favourable opinion. He has constant night and day service, and can illuminate the house at any moment in an instant. Even his daughter's doll-house has its four rooms lighted by little fairy lamps. The use of only 30-volt pressure renders safety from shock or fire certain. He carries the light throughout his garden, and can visit his green-houses any hour of the night. He can even light a cigarette by electricity. Mr. Preece regards electric lighting still as a luxury, and estimates the cost of fitting a house like his at 71. 10s. per lamp. He does not expect to consume more gas than hitherto, while he has filtered light and purified air. The advantages are the steadiness and comfort of the light, the durability of the decorations, the absence of heat and destructive gases, pure air, and longer life to all using electric light. Its economy consists in being used only when and where wanted. If it costs twice or thrice what gas does it need only be used half or one-third the time; gas is needlessly wasteful. He spoke hopefully of the future of electric lighting, and believed everyone would have it if electricity were supplied at our doors.

ANTHROPOLOGY SECTION.

In his presidential address Dr. EDW. B. TYLOR remarked that the newly-constituted section of anthropology, now promoted from the lower rank of a department of biology, holds its first meeting under remarkable circumstances. Here in America one of the great problems of race and civilisation comes into closer view than in Europe. In England anthropologists infer from stone arrow-heads and hatchet blades, laid up in burial mounds or scattered over the sites of vanished villages, that stone-age tribes once dwelt in the land; but what they were like in feature and complexion, what languages they spoke, what social laws and religion they lived under, are questions where speculation has but little guidance from fact. It is very different when under our feet in Montreal are found relics of a people who formerly dwelt here, stone-age people, as their implements show, though not unskilled in barbaric arts, as is seen by the ornamentation of their earthen pots and tobacco-pipes, made familiar by the publications of Principal Dawson. As we all know, the record of Jacques Cartier, published in the 16th century collection of Ramusio, proves by text and drawing that here stood the famous palisaded town of Hochelaga. Its inhabitants, as his vocabulary shows, belonged to the group of tribes whose word for five is *wisk*—that is to say, they were of the Iroquois stock. Much as Canada has changed since then, we can still study among the settled Iroquois the type of a race lately in the stone-age, still trace remnants and records of their peculiar social institutions, and still here spoken their language of strange vocabulary and unfamiliar structure. Peculiar importance is given to Canadian anthropology by the presence of such local American types of man, representatives of a stage of culture long passed away in Europe. Nor does this by any means out from the Canadian mind the interest of the ordinary problems of European anthropology. The complex succession of races which make up the pedigree of the modern Englishman and Frenchman, where the descendants, perhaps

of palaeolithic, and certainly of neolithic man have blended with invading Celtic, Roman, Teutonic-Scandinavian peoples—all this is the inheritance of settlers in America as much as of their kinsfolk who stayed in Europe.

Of late no great progress has been made toward fixing a scale of calculation of the human period, but the arguments as to time required for alterations in valley-levels, changes of fauna, evolution of races, languages, and culture, seem to converge more conclusively than ever toward a human period—short, indeed, as a fraction of geological time, but long as compared with historical or chronological time. While, however, it is felt that length of time need not debar the anthropologist from hypotheses of development and migration, there is more caution as to assumptions of millions of years where no arithmetical basis exists, and less tendency to treat everything prehistoric as necessarily of extreme antiquity, such as, for instance, the Swiss lake-dwellings and the Central American temples. There are certain problems of American anthropology which are not the less interesting for involving no considerations of high antiquity; indeed, they have the advantage of being within the check of history, though not themselves belonging to it. Humboldt's argument as to traces of Asiatic influence in Mexico is one of these. The four ages in the Aztec picture-writings, ending with catastrophes of the four elements—earth, fire, air, water—compared by him with the same scheme among the Banyans of Surat, is a strong piece of evidence which would become yet stronger if the Hindoo book could be found from which the account is declared to have been taken. Not less cogent is his comparison of the zodiacs or calendar-cycles of Mexico and Central America with those of Eastern Asia, such as that by which the Japanese reckon the 60 year cycle by combining the elements seriatim with the 12 animals, mouse, bull, tiger, hare, &c.; the present year is, I suppose, the second water ape year, and the time of day is the goat hour. Humboldt's case may be reinforced by the consideration of the magical employment of these zodiacs in the Old and New World. The description of a Mexican astrologer, sent for to make the arrangements for a marriage by comparing the zodiac animals of the birthdays of bride and bridegroom, might have been written almost exactly of the modern Kalmuks; and, in fact, it seems connected in origin with similar rules in our own books of astrology.

NOTES ON RESEARCHES AS TO AMERICAN ORIGINS.

Mr. HYDE CLARKE, D.C.L., reviewed the paper he had contributed "On American Origins" to the British Association and other societies, and stated the result of his investigations in their present development. Without entering into any defined statement as to the intercourse between the Eastern and Western hemispheres in the earlier epoch of gesture language, he inferred it from various facts. The ideographs were also of the early epoch. The invention of speech, which took place in the Eastern hemisphere, and was transmitted to the Western, created a great psychological and historical revolution. With this latter epoch we can connect the numerous phenomena of language, culture, and mythology, the resemblances of which have been so long noted. The adaptation of a phonetic system to ideas expressed by gesture, as explained by Mr. Clarke in the Journal of the Association, depended on the full application of the observations of Mr. Alfred R. Wallace, that in many languages the mouth, tooth, and nose were severally represented by labials, dentals, and nasals. These are applied primarily and secondarily, &c., in series, as from mouth, eye, ear, sun, moon, egg, blood, cat, speak, &c., and with various conventional and symbolic meanings. The resemblances among languages did not depend upon descent from one primeval language, but on the propagation of languages based on one phonetic and psychological system. Of such resemblances he instances that of Yagha, of Tierra del Fuego to West Africa. He recalled that the geological nomenclature of America in names of mountains, rivers, lakes, and towns corresponded with that of the old world. The animal names were of common origin with the nomenclature of tapir, with elephant, puma, with lion and tiger, llama, &c., with horse. The mythology or fetishism shown by the Bribrí of Central America was in conformity with an identical origin.

A variety of facts of common propagation had to be accounted for, and although intercourse across Behring's Straits and the Pacific would partially explain, there must have been direct and continual intercourse across the Atlantic, assisted by the currents. He rejected the geological hypothesis of an Atlantis extending across the ocean, and now submerged; but considered the traditions in the dialogue Timæus, of Plato, to represent broadly the antecedent conditions. America had come under the dominion of an Atlantis, or Great King of the West, with territory also in Mauritania, Spain, and Britain. His defeat in naval contest in the western Mediterranean by the leading kings of the East was an efficient cause for the cessation of intercourse with America. The legend of the sinking of Atlantis, and of the filling up of the ocean with mud so as to make it impassable were mere exorcismes on the legend, but had fascinated most students. If we treated the elephants as tapirs and the horses as llamas and beasts of burden, not dealing with the detail of the legend too strictly, then the legend itself, freed from impossibilities and inconsistencies, acquired consistency. Mr. Clarke, in combination with that of the Atlantis, dwelt on the legend of the Four Worlds, as showing a former knowledge of the configuration of the Americas in the ancient world. According to his investigations the languages and culture of America are not of local growth, but imparted by a higher race at the period of the foundation of like institutions in the eastern world. The differences he assigned to distinct development chiefly consequent on the breaking off of intercourse.

THE SOUTH STAFFORDSHIRE COAL FIELD.—The report of the joint excursion of the Chesterfield and Derbyshire Institute of Mining, Civil, and Mechanical Engineers and of the South Staffordshire and East Worcestershire Institute of Mining Engineers in last week's Mining Journal extended to the Thursday evening. The following day's proceedings were of an equally interesting character. Mr. Alexander Smith, M.I.C.E., the hon. secretary, favours us with a report that on Friday the members made a tour through the Black Country—from Hamstead to Wolverhampton—for the purposes of visiting the various collieries and points of interest in South Staffordshire, with the object of giving the members a general idea of the whole of the extensive coal fields for which the district is so famous. The party left Birmingham (New-street) for Perry Barr, and from thence they proceeded to Hamstead Colliery, where they were met by Mr. Smallman, one of the directors, and Mr. Mucham, general manager. Having been joined by the Dudley contingent, who were conveyed to Hamstead in brakes, the party at once proceeded to inspect the surface plant, the necessary explanations being given by the officials named. At Sandwell Park Colliery the whole of the extensive surface plant, consisting of 10 steam-engines, a large number of boilers, hauling gear, and endless-chain machinery, were carefully inspected by the excursionists. On leaving Sandwell the party proceeded to the Hailstone Basaltic Quarry and Turner's Hill, Rowley, from which points of vantage nearly the whole of the South Staffordshire and East Worcestershire coal field can be distinctly seen. As on the previous day the whole of the journey was carried out by the advice and assistance of Mr. Alexander Smith, M.I.C.E., and secretary of the local institute, and Mr. Henry Johnson, jun. The party next proceeded to Dudley, where they lunched at the Dudley Arms Hotel. Prof. Brown presided, and some 90 gentlemen supported him at the meal. Messrs. Morris Brothers drove the party to the Castle Hill, where the ruins, grounds, and caverns were inspected under the guidance of Mr. E. Fisher Smith, Lord Dudley's principal mine agent. From the hill the party went to the celebrated open works of Lord Dudley, at the Foxyards. The party then reached the Wolverhampton-road, and proceeded to the Exhibition held in that town. Previous to breaking up votes of thanks were passed to Lord Dudley, Mr. E. F. Smith, Mr. A. Smith, and Mr. H. Johnson, jun.

HOLLOWAY'S PILLS AND OINTMENT—RHEUMATISM AND GOUT.—These purifying and soothing remedies deserve the earnest attention of all persons liable to gout, sciatica, or other painful affections of the muscles, nerves, or joints. The ointment should be applied after the affected parts have been patiently fomented with warm water, when it should be diligently rubbed upon the adjacent skin, unless the friction causes pain. Holloway's pills should be simultaneously taken to diminish pain, reduce inflammation, and purify the blood. This treatment abates the violence, and lessens the frequency of gout, rheumatism, and all spasmodic diseases which spring from hereditary predisposition, or from any accidental weakness of constitution. The ointment checks the local malady, while the pills restore vital power.

Meetings of Public Companies.

CAMBORNE VEAN MINING COMPANY.

PROPOSED CONVERSION INTO A LIMITED LIABILITY COMPANY.

An important meeting of shareholders was held at the offices of the purser (Mr. R. S. Teague), Redruth, on Sept. 4.

The PURSER, who remarked that the gentleman he should name had an important scheme to lay before them, proposed that Mr. FIDLER (of Newbury), the largest shareholder present, be invited to take the chair.—This was seconded by Mr. W. H. RULE, and adopted.

The notice convening the meeting having been read, the PURSER submitted the balance-sheet. This showed that the labour costs for four months were 2822; merchants' bills, 651; Employers' liability, 31; bankers' charges, 121; total, 3505. On the credit side copper ore realised 1104 (on account, the actual receipts being 1174), leaving a balance of 2533, and increasing the debit balance to 570.

The report of the agent having been read, this stating that operations during the past four months had been limited on the north and south lodes. Referring to the mine, Capt. PRISK remarked that from the commencement their work had been conducted on a limited scale. He had hoped that they would have met with more success in the shallower levels. They had an extensive set, and he wished they could do more. Their object that day, he added, was to see if they could not arrive at a decision to extend operations in the direction of forking the mine.

Capt. OLIVO, who had worked in the mine before its stoppage, was appealed to as to the prospects in the bottom levels, and spoke encouragingly. There was a large tinny lode in the bottom of the mine. It was not, however, when the concern was abandoned, rich; but produced from 2½ to 3 per cent. of tin.

Mr. W. H. RULE: Is the Dolcoath south lode running through our set?—Capt. PRISK: Yes.—The CHAIRMAN: You can walk upon it.—Mr. RULE: It has been reported as running through Camborne Consols set.—Capt. PRISK: Oh! nonsense.

The CHAIRMAN rose to propose a resolution to the effect that it was desirable that the company be converted from a Cost-book company to a company with a Limited Liability. He said—When Camborne Vean was restarted it was, of course, intended to resume the sinking of new shaft; but there was a general hope and expectation that above the water level copper ore might be found in such quantities as would materially assist in the cost of sinking, if nothing more. These expectations have not as yet been realised, chiefly because so little has been done by way of exploration. Discoveries of the greatest importance may of course be made. After laying the matter before certain gentlemen they said something like the following:—"We knew a good deal of Camborne Vean before; we now know a good deal more, and are of opinion that it is as fine a mining adventure as can be found in any part of the world; and we are satisfied that it will be a great success if vigorously worked, and a credit to those who may succeed in bringing it before the public." They then said:—"We are convinced that we can float it as a Limited Liability company, but we must choose our terms."

It is for this that I think it is a good stride in the right direction. In proposing to change it from a Cost-book company, working under certain Acts of Parliament, within the jurisdiction of the Stannaries Court, to a company formed under totally different Acts, and to set it going, is a work of some magnitude, and in a company comprising 100 individuals, more or less, there cannot but be diversity of opinion. I trust, however, that we may come to a unanimous decision on the main points before us. In response to the circulars which I have ventured to send to each shareholder, 55 out of every 60, that is—5800 shares out of 6000—all, with a single exception, expressed the opinion that it is the right thing to do, so that we know already that for all practical purposes we are unanimous. I have hope, therefore, that the resolution to be proposed will be passed by a unanimous vote. If that is done it will then be necessary for us to arrange the terms, and you will, of course, give to the matter the fullest consideration, and after you have expressed your views, then will come the time for carrying them out. I should mention, before I go further, that among others we had an interview with a gentleman who is interested in bringing out a mine to the north of Camborne Vean, called Wheal Camborne, as a Limited Liability company, and who had made an offer to some of the largest of your shareholders. That offer, as I understand, was to purchase your shares at the rate of 13s. each, not in cash, but in the shares of that company, which offer was not accepted. The offer was not made to me, and I know nothing of it, but it must be clear to all who have studied the matter, that if the valuable piece of ground west of Dolcoath is to be developed the company that holds Camborne Vean must do it. It is probable that some gentlemen present who have recently become shareholders are scarcely aware of the value of this property, and I will, therefore, mention some of the leading particulars. Camborne Vean Mine is situated in the very heart of the richest mineral district in the kingdom, and the great value of the property as a mining adventure is not only that it has shown its own capability of producing large quantities of rich copper ore, but that it adjoins Dolcoath, the richest tin mine in the world; and not only so, but the lodes which in Dolcoath have proved richer for tin and copper than any other mine run through your set from east to west. The geological formation is also the same as Dolcoath—that is, a junction of the killas and granite rocks, and an elevation some of the leading particulars. 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Camorne Vean, and he tells you that the lode in that part nearest to us looks quite as well as their immensely rich lode looked when they first got into the granite. Here, then, are two pieces of land, two properties adjoining each other, in all respects alike, with the same lodes running through both. The thing should be done we have not the means of doing it. What, then, ought we to do under the circumstances? It is most clear to me that the only thing we can do is to go to the public and say—"We, and others, have spent a lot of money in sinking shafts and other necessary work; we are now within sight of the prize, having actually got into the granite and into the tin ground, and sunk it several fathoms, but we are not as deep as Dolcoath. We must yet go deeper, but our resources are exhausted. Will you help us? We have spent so much per share, and we ask you to spend a like sum, if so much would be required, and your shares shall rank with ours." That, so far, seems to me quite fair, but then comes the difficulty. If you ask your neighbours to join you, will they do so in sufficient numbers and for a sufficient amount? Some of you will say Yes, and others No. My own opinion is, that the large sum we want can only be raised by those who make this their business. I daresay it is a lucrative business, perhaps even more so than mining; but they do for you what you cannot do for yourselves, and they must be paid for it. It will require all the resources at their command, and if we adopt this plan our policy should be to give them all the help we can. They have to get the assistance of brokers and others, who demand a considerable percentage on any business they may do; and we should also bear this in mind, that the terms which you require for your property, and the terms which they may require, are totally different things. If we get what we think we ought to have, and over and above that, have the mine set to work in good style, that is all we want, and what they may get is not exactly our business. The question we have to consider is, What ought we to have? On the one hand, we should have a fair sum, not give away our property; and, on the other hand, we must be careful not to ask such a sum as will block the way, and prevent a new company from being started at all. I will only add further that, of course, the scheme may fall through altogether. In that case you will be "as you were;" you still hold your shares and go on as you are going, and be none the worse, but rather the better, for the effort you will have made to get your ship into deep water, instead of being so near the rocks as she is at present. He moved the resolution on which he had spoken.—**MR. W. H. RILEY** seconded, feeling sure that whatever the Chairman proposed would be for the benefit of the shareholders.

MR. SOUTHEY enquired how many shares it was proposed to issue?—**THE CHAIRMAN** said this was a matter for future consideration. In his opinion the capital should be 50,000, or 60,000. It was for them to put a value on their own shares. If they said 1s. per share that would represent 60,000; if 30s. per share, 90,000. They would not be able to get money for their shares. They would take good care that no big charges were made for promotion money. Perhaps a fair charge for the promotion on the capital raised was 10 per cent. The remainder of the new capital could go to provide machinery to work the mine in an efficient way. He was disgusted with the amount sometimes charged for promotion money.

MR. SOUTHEY remarked that it was important to know what the charges for raising the money would be; and

MR. F. W. MICHELL remarked that it was important to guard against the promoting agents having the power to place shares of their own on the market, and damaging the company. He recollected a case where certain persons who raised money for an undertaking were given a number of 1s. shares, and these people forthwith went on the market, sold the shares for 7s. 6d. each, and wrecked the company.

THE CHAIRMAN admitted that this was an important point, and had not escaped him. He was of opinion that the present shareholders should not sell any shares till the company was formed. Then the financiers, who would be paid in shares for their work, would not have any shares until the company was formed.

MR. ROWE (Tinsley) suggested that the financiers who should be called upon to be paid in cash, after the larger portion of the capital had been subscribed.

MR. RILEY remarked that there were two or three firms in London prepared to float the company.

MR. F. W. MICHELL was of opinion that Mr. Rowe's suggestion was the only way to meet the difficulty.

THE CHAIRMAN felt that the financiers would not immediately sell their shares in the event of their having them, but would wait for a rise.

The resolution was agreed to.

MR. SOUTHEY said they had had examples of Limited Liability companies in Cornwall, and he should be sorry to see Camorne Vean, resulting in a like failure. They should be careful in selecting promoters.

THE CHAIRMAN presumed that Captain Southey alluded to certain mines started with a large amount of promotion money, and in connection with which little had been done in the shape of the development of the mines.

Captain SOUTHEY: That is generally the case.

THE CHAIRMAN said that they must avoid anything of the kind. He knew that Cornishmen had a certain distrust of Limited Liability concerns. It must be recollected that the Act was very stringent, but they could not prevent in that Act, as in certain other things, persons acting as Captain Southey had suggested.

MR. JOSEPH ABBEY, who claimed as a stranger to have some knowledge of Limited Liability companies, remarked that they could float the mine as well as any financiers in London. What people outside the county required was confidence. In regard to Cornish Limited Liability companies started by London companies, he knew that the public outside positively had a horror of them. If (say) a dozen Cornish shareholders having confidence in the concern, signed the prospectus, believing that the prospects of the mine were good, he had no doubt as to their success.

THE FURBER (Mr. Teague) felt that the suggestion of Mr. Abbey was an excellent one. They would save several thousands of pounds in adopting it, in preference to employing financiers.

MR. MICHELL thought that 30,000, judiciously and carefully spent would be sufficient.—**THE CHAIRMAN** agreed.

The accounts and report having been adopted, the meeting was adjourned for four weeks, it being arranged that the Chairman have full power to enquire into the subject of terms.

CANADIAN COPPER AND SULPHUR COMPANY.

A general meeting of shareholders was held at the offices of the company, Queen-street-place, on Monday, to discuss the position of the company.—**THE CHAIRMAN** was occupied by Mr. J. W. MACLURE.

MR. RICHARD GARLAND (the secretary) read the notice calling the meeting.

THE CHAIRMAN said that since the last meeting held in April the directors had taken various opportunities of addressing the shareholders and debenture-holders, but the result of those communications had been that but very few replies had been received. The meeting to-day was also very thinly attended, and on behalf of his colleagues and himself he must express his very great astonishment that the shareholders seemed to take so little interest in saving a property which he believed to be very valuable, but one which the directors themselves could not, through their own personal efforts, continually maintain in a state of efficiency in order to develop it for the benefit of the general body of shareholders. To allow the company to go into liquidation, and to be submitted to a forced sale at the present moment, would be a most ruinous thing to those who had invested their money in it. When they had a property of such value and extent they were acting foolishly in their own interests in not taking a more active part in protecting it. As regarded the steps which had been taken since the last meeting on April 15 the directors sent out a circular proposing to issue 40,000 of first mortgage debentures, in order to pay off the present mortgage. The result was that the few who helped the company before replied again, and gave in their adhesion and paid their deposits, but the directors, having put down the figures at 45,000, as the amount of debentures to be issued, could not make an allotment for a smaller amount than originally proposed, without the consent of persons who had subscribed; and, as the amount offered was but one-fourth of that mentioned, the deposits which were paid were still at the bankers. He might tell them frankly that the amount subscribed was not sufficient to place the company in a position to make it a proper going concern. The directors also sent out a circular on May 12, asking the debenture-holders if they were willing to exchange their debentures for a similar amount in the new issue of 45,000. From a total of 44 debenture-holders the directors received consents from only 9; therefore, these again the directors were hampered, and could not do anything. On Aug. 22 the directors had to send out a circular stating that the bank, which had made certain advances on the other side, had commenced proceedings against the company. The circular which the shareholders received contained the following telegram from the company's solicitor in Canada:—"Execution issued; sale movable September 16, immovables this district November 10." The directors telegraphed to know who it was that was pressing for a sale of the company's property, and it turned out to be the bank. The sale had since been delayed till Oct. 1, and, therefore, they had the whole of this month to turn round in, if the shareholders were determined to protect the property in the only way in which it could be protected—by doing what the directors and their intimate friends were prepared to do—to find funds to get rid of the pressing claims on the company. It seemed a most unfortunate thing that such difficulties should arise just at the present time, when the directors were in negotiation with a neighbouring company with the view of making a working arrangement with them, which would make this company what it was always anticipated it would be—a paying and sound investment. The company possessed a very large quantity of land, on which were various mines, in some of which the ore was of a low grade, and some of a richer grade, but the richer ores were not much developed. In the neighbouring mine to which he had alluded the Huntington Mine, the ore which was developed was of a richer quality, and it was believed that by working the two mines conjointly they could be worked on an economical basis, and with good results. Unfortunately, however, the present price of copper was lower than he supposed it had ever been known. In 1882 the price of copper was 14s. 1½d., and to-day it was 10s. to 10s. 9d. No doubt the depression in price was only temporary, but it seriously affected this company. When they sent ore from Canada into the States there was a duty to be paid there, and when it was brought back to Canada there was a duty to be paid upon it as manufactured copper. If they sent the ore to this country as regulus they had to pay upon the heavier quantity, and if it went back to Canada there was a heavy duty on the ore to be paid there, which was no benefit to the company, and destroyed the very object which they had in manufacturing in the country itself for the Canadian demand, which was very considerable. The directors had done everything they could to save the property from being in any way broken up or divided. After the very strong report which Mr. Bird, one of the directors, drew up on his return from visiting the property, and from all the other reports which had been received, the directors had no reason to withdraw one word which they had said about the value of the property; and the directors fully believed that the Huntington and Work were paying, and this company's common ores were used with that company's richer

ores the result would be successful; and the probability was, that if nothing was done by the shareholders, some other gentlemen, probably the gentlemen who were now pressing the company for money, would form themselves into a syndicate or something of the kind, and buy the property at very much depreciated value, and in one or two years they would obtain the satisfactory results, which it would be the fault of the shareholders if they did not avail themselves of the opportunity of obtaining for themselves. Mr. Bird, Mr. Lambert, and he himself were prepared to take their proportion, and, probably, considerably more than their proportion, in the concern, in which they had great confidence, and would continue to give every assistance they possibly could in developing the property. The directors made this appeal as strongly as they could, especially to the large shareholders, who really seemed to be utterly regardless of their own interests in not attending the meeting and looking after their own property, which some of them knew to be a property of a very valuable kind.

MR. FORD asked the result of the action taken in connection with the debentures in the Canadian courts?

MR. JOSEPH asked how many debenture-holders had sent in their applications? **THE CHAIRMAN** said that the debentures alluded to by Mr. Ford were sent out to Canada by Mr. Holmes, the company's solicitor, in order to be registered, so that they might rank in the event of a forced sale, and have their interests properly protected, and those debentures were now in a position to prove their claims in the event of any action being taken by the bank.

MR. FORD said he supposed these debentures were a first charge upon the property.

THE CHAIRMAN said that no doubt wages would come first.

MR. HOLMES said it seemed by the Canadian law that in the case of a creditor getting execution there were certain preferential claims—the payment of the employees of the company, and then when the property was sold the money divided in the Canadian Courts amongst those who sent in their claims.

MR. FORD said he asked the question in order to know whether the next 40,000 would be in the same position.

MR. HOLMES said the 40,000 would be transferred to trustees, and would be a first charge.

MR. JOSEPH: Exclusive of the board how many persons have applied for debentures?—**THE CHAIRMAN**: About five, to the amount of not more than 10,000.

THE CHAIRMAN, in reply to a further question, said that absolute security would be given to the 40,000, according to Canadian law.

MR. JOSEPH said he objected to the issue of preference shares or further debentures as they would override the interests of the ordinary shareholders. It would be much better to start a new company altogether, and call it the New Canadian Copper and Sulphur Company, which could lease the works from the old company. Since he had been a shareholder one part of the business of the company had been in abeyance—the making of sulphur. Capt. Bennett had stated that the ore had 3 per cent. of copper and 40 per cent. of sulphur, and he certainly thought the company ought to put up reduction works, and the sulphurous vapour condensed into sulphuric acid. His suggestion was that the new company should be formed with a capital of 50,000, in shares of 1s. each, of which 2s. 6d. per share should be paid on application, and 7s. 6d. per share on allotment, and the remainder to be called up as might be necessary. The old company to lease to the new company the whole of the property for 25000, of which 12000 would pay interest upon 15,000, and 13000 would pay London expenses, and provide for the amortisation fund. The new company to give 15,000, premium for the lease of the property, and the old company to be divided as follows:—5000, to 10 per cent. on 50,000, capital of the new company, if all called up; 15000, to recoup the new company the 15,000, they paid as premium; and 4000, to pay 5 per cent. upon the capital of the old company. His idea was that at the present time they were wasting 40 per cent. of the product, which ought to bring a further profit of at least 15,000. The profits he had mentioned were not large amounts on the 400,000, which had been laid out on the property. Mr. Joseph then went into some further figures to show the beneficial effect of the course he advocated, and said that the new company, if formed, would save the old company a considerable sum of money in doing anything but what he proposed, an instance in which a similar course of action succeeded in connection with another company, and he believed it would succeed in this.

THE CHAIRMAN, in reply to a question, said there were 1150 shareholders in this company, many of the larger of whom could well afford to subscribe for the debentures. He was extremely anxious to protect the smaller shareholders. The works were in perfect order, but the company was not taking out copper because it could only be done at a loss. They were just keeping the works open. He might remind the shareholders that Mr. Lambert, Mr. Bird, and himself were not original directors, but they came in to try and bring the company round.

A conversation ensued, in the course of which very general approval was expressed of the suggestion of Mr. Joseph, and that gentlemen further suggested that perhaps a company could be formed to take over this company and also the Huntington Company.

THE CHAIRMAN said that such a scheme had been under the consideration of the directors, but circumstances had occurred which had prevented it being brought before the shareholders.

The following resolution was passed:—"That the directors be authorised to carry out negotiations for the amalgamation or leasing of the company's property."

A vote of thanks to the Chairman and directors closed the proceedings.

KIMBERLEY CENTRAL DIAMOND MINING COMPANY.

A general meeting of shareholders was held at the offices of the agents, Messrs. Freeman and Bloomfield, Holborn Viaduct, on Tuesday.

MR. BARING GOULD in the chair.

THE CHAIRMAN said the notice convening the meeting had scarcely been correct in stating that the meeting had been called to receive the report. The report had already been received in Kimberley, and though they could discuss it and send out any resolutions embodying their wishes, the meeting had no power to alter anything that had gone before. As there were some recent shareholders present he would state that the real reason why these meetings were held in London was this: When the English shareholders first joined the company it was felt that there was some need for them to meet together for the purpose of asking for and receiving such information as those who had been at Kimberley, or were still in connection with it, could give them. They might be sure that any resolution sent from this side would receive every attention from the directors and shareholders on the other, for out of the total capital of 618,000, odd, 350,000, at least was held in England, so that as matters stood one-half of the shares were held in England they had a right to expect that, at all events, their views should be acknowledged out there. Besides arranging for the holding of a half-yearly meeting in London, it was decided that three shareholders should be selected as a committee to represent the shareholders in London, the gentlemen selected being Mr. Newberry, Mr. Porter Rhodes, and himself. This committee had acted to the best of their power in every way. They had been adopted by the board of directors at Kimberley, and had been requested to act in the same way in doing anything but what they proposed, and in doing so they were in close communication with the directors, who laid before them the information in their power, not, of course, always for general circulation. He did not wish to say much in opening the proceedings, but there was one point occupying some space in the report upon which he could give some later information. It would be seen from the report that the directors had asked for tenders to deliver something like 1,000,000 tons of blue ground on the surface. These contracts were sent to the agents asking them, with the assistance of the committee, to decide what was best to be done in the matter. 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PROVINCIAL STOCK AND SHARE MARKETS.

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Mining Correspondence.

BRITISH MINES.

BEDFORD UNITED.—H. Trezise, Sept. 9: There is no particular change in any of the tubework or tributes bargains since last week's report, except in the winze sinking below the 42nd shaft, where the lode is 3 ft. wide, and worth 10s. per fathom, and likely to improve. This is evidently the continuation of the shoot of ore we had in the upper levels, it contains the richest and best quality ore that I have seen since I have been in the mine, and as it is likely to continue in depth it will no doubt prove to be a good and lasting thing. The work throughout the mine is progressing satisfactorily.

CARN CAMBORNE.—W. C. Vivian, Sept. 11: In the 105 we have commenced rising against the winze under the 95, and I am glad to say are breaking some rich copper ore. We calculate that we have about 12 ft. to rise and sink to effect the communication between the two points referred to, and the improvement in the productiveness of the lode gives us an encouraging prospect for afterwards opening out the lode westward to the central cross-course. In the winze the water interferes with rapid sinking, but after the communication between this and the 105 has been effected, we shall be in a much better position for the further development of the lode.

CATHEDRAL CONSOLS.—S. Davey, Sept. 9: The cross-cut still continues to be very wet, and we have to-day met with another small branch, which is letting out a quantity of water. We have not as yet found the lode at the 50, but from the indication of to-day, I do not think we shall be long; the ground is of a congenial nature for the production of mineral.

CREIGION.—H. Hotchkiss, Sept. 10: I have no important change to report from this mine to-day. The lode in the east end is well defined, and letting out water pretty freely. In the west end the lode is rather more dry and tight.

DEVON FRIENDSHIP.—P. R. W. Daw, Sept. 11: Our setting report shall be sent to you next week. We have completed the tramway from the dressing-floors to stamps; this will enable us to reduce our surface cost 7s. 10s. per month.

DEVON GREAT CONSOLS.—Isaac Richards, Sept. 11: Wheel Maria: In the shaft sinking below the adit on the Capel Tor lode, the lode is 3 ft. wide, of a promising character, and yields some good quality copper and munda ore. Wheel Emma: Railway Shaft: In Bray's cross-cut south at the 205 the ground is without any material alteration. In Richards' cross-cut south at the 180 the ground is favourable for exploration. No further portion of lode has yet been intersected. Watson's: The work in connection with cutting tripl-plate, &c., at the 110 in the engine-shaft is progressing satisfactorily. In Dunston's winze in the bottom of the 83, west of the engine-shaft, the lode is 3 ft. wide, yielding some saving work for copper and munda ore. All other points of operation throughout the mine are without important alteration.

DEVON GREAT UNITED.—Isaac Richards, Sept. 11: In the 120, east of Willeford's shaft, the lode is 4 ft. wide, of strong masterly character, and yields good stones of copper and munda ore. The distance driven during the past month is 2 ft. In the 120, west of Willeford's shaft, the lode is 3 ft. wide, of a very promising character, and is yielding some good quality copper and munda ore. The distance driven during the past month is 1 ft. In the 104, west of Willeford's shaft, the lode is unproductive. The distance driven during the past month is 2 ft. In the 50, west of Watson's shaft, the lode is 3 ft. wide, composed of capel and quartz, with peach, munda, and some copper ore of good quality. The distance driven during the past month is 1 ft. In the cross-cut south at the 50 the ground is favourable for exploration, and congenial for the production of mineral. The distance driven during the past month is 2 ft. 3 ft.

DRAKEWALLS.—T. Gregory, Sept. 10: Engine-shaft: We have sent down the necessary rods, stays, set-off bearings, &c., and put them in position, together with the required pump work for forcing of the mine to bottom, and clearing up of the engine-shaft at the same time. Ten men are engaged on this work, and every effort will be made to reach the bottom without loss of time. Driving west from the end of deep adit, the lode is 3 ft. wide, and is progressing fairly well, our object being to reach the old western workings, so as to bring back the water through the deep adit instead of allowing it to go down to the bottom of the mine to be repumped by steam. North Tin Lode: Some 13 or 14 years ago we discovered at surface and worked thereon, near Sand Hill Lodge, a large tin lode, composed of gossan, quartz, peach, and tin ore underlying north at about 1 ft. per fathom, toward or into the granite close by, and from which we broke several tons of fair quality tinstone. The winter season setting in flooded our workings, but little has been done since on this very promising lode. However, I have now placed two men to clear the old workings, so as to give it a further trial, a few days only being required to open it again. As before stated this lode goes down into the granite very near our present workings—a most important feature, and can be intersected and developed by a cross-cut of some 35 to 40 fms. north from the present deep adit, and your present drawing and stamping machinery could easily be brought to act on this part of your property. A plan was suggested by the late Captain Chas. Thomas, of Dolcoath, and approved by the Duchy agents for working tin (four lodes, tin and copper), and north of Ebb, remains entire; it was this plan in length, with a height of back of over 10 fms. in going west close on the granite which you will intersect in depth, and in proximity with the most powerful cross-course of the whole district I regard these lodes as a most important future for the prosperity of this mine, as the mine is opened in depth.

EAST BLUE HILLS.—S. Bennetts, W. K. Mitchell, Sept. 10: There is not much alteration to notice in either the width or the value of the lode in the ends at the 10 during the past week. In the east end it is worth 7s. to 8s. per fm., and in the west end 1s. per fathom. A stop has been commenced in the back of the 10, on a lode worth 10s. The tinstone on the mine is fast accumulating.

EAST BOTALLACK.—Thomas Trahair, Sept. 10: New Ballewidden Lode: Since our last report we have cut a small lode or branch in the cross-cut. I think it is a branch from the south lode. The lode in the 12, driving east from shaft, is 2 ft. wide, worth 4s. to 5s. per fm. The lode in the steps in the back of this level is 4 ft. wide, producing 25 lbs. of tin to the ton of tinstuff. In the 12, driving west from shaft, the lode is 2 ft. wide, worth from 5s. to 6s. per fathom. The western ground is opening up well, and there is no doubt as we near the Old Ballewidden Mine we shall get further improvement.

EAST WEAVER.—W. Rowe, Sept. 9: Penrose engine-shaft is drained to the 90, bearing and cistern and 20 and 10 in. bottoms of lifts are all fixed in their places, and the men are engaged about the necessary work to be done preparatory to sending down the main rods. When these are fixed together with the lifts we shall forthwith drop to the 100, to which point we find the shaft clear, and it may be so below that point. We have examined the 90 so far as it is accessible, and carefully surveyed it in connection with the 60 and adit levels, and from this we have strong reasons to believe that the western part of Middleton's lode has not been seen in the 35, unless it has been discovered from some part north of Ebb, remains entire; it was this plan in length, with a height of back of over 10 fms. in going west close on the granite which you will intersect in depth, and in proximity with the most powerful cross-course of the whole district I regard these lodes as a most important future for the prosperity of this mine, as the mine is opened in depth.

ECOTON.—W. Rowe, Sept. 2: Fair progress has been made during the past week in each branch of our operations. Clayton main is drained to 4 fathoms below the 70, all our pitwork running smoothly, and the footway completed down to near the water level. We are getting the bad-plates of compressors into position as rapidly as may be expected, and have got one of the new rollers through the deep adit to Clayton engine-room. The arching of Ecoton deep adit has also gone forward satisfactorily. I have no important change to notice in the development work, except the cutting of a small pipe or ore chamber in Salt's level west upon Ecoton vein. We have only got a short distance into this activity, which appears to widen in a southerly direction, and is filled with low grade copper ore, galena, and crystals of limonite. The copper ore is mostly carbonate (green, brown, and black), embedded in soft mineral earth, with small crystals of galena. We shall open out more of this in a few days, and learn its extent and character. Its location is 13 fms. above the adit level, and in the western zone of productive rock, the same that encloses the branches of richer ore found in the Vivian drive, but about 60 fms. more to the north. We shut down the deep valve of our reservoir on Saturday evening, and it is now filling with water, which will shortly relieve us of the trouble and expense of pumping river water to supply our various requirements. It is said to be 40 years since this reservoir was cleared.

GAWTON.—G. Rowe, Sept. 8: The lode in the 117 east is looking very promising, and yielding 3 tons of arsenical munda per fathom, and intermixed with a little copper ore. No. 1 stop in the back of the 117 east is yielding 7 tons of arsenical munda per fathom. No. 2 stop in the back of the same level is yielding 6 tons of munda and ore per fathom. The lode in the 35 east is 7 ft. wide, composed of capel and arsenical munda, and yielding 8 tons per fathom. The stop in the back of the 23 east is yielding 9 tons of munda per fathom. The stop in the back of the 70 east will yield 7 tons of arsenical munda per fm. The stop in the back of the same level, west of shaft, will yield 9 tons of arsenical munda per fathom.

GLASGOW CARADON CONSOLS.—W. Taylor, W. J. Taylor, Sept. 9: We have not reached the south lode on the 125 cross-cut, the ground is very much easier apparently near the lode, but we have from 2 to 3 fathoms to get under the perpendicular, which we may have to drain, seeing the underlay in the winzes bottom of 114 is rather south. This position, however, is more favourable for the lode being productive; we are pushing this on as fast as possible. The cross-cut is hardly sufficiently advanced to commence opening on Harvey's at this level, hope to do so after another week. The winzes and stopes in bottom of 114 on Harvey's lode are looking very well, varying in value from 12s. to 15s. per fathom. The winze sunk on the north part of south lode, bottom of 114, is worth 6s. per fathom. We are expecting this daily to fall in with the main part, when we shall have a more valuable lode. We have discovered some good ore ground in a tribute pitch on south branch, back of this level, apparently standing whole for a considerable length. We have commenced to open the 114 level on it, and hope soon to get the same run of ore, now worth about 5s. per fathom; we hope this will turn out of some importance.

GOODEVERE.—R. Knott, Sept. 11: The appearance of the lode on the winze sinking below the shallow adit level are much the same as reported last week—lode about 5 ft. wide, and producing good work for tin. This is the best lode we have ever seen in the mine, which of itself is a good evidence of your soon laying open a remunerative property.

GREAT HOLWAY.—W. T. Harris, Sept. 11: Level Engine-shaft: The 60 level, No. 1 pitch in back, maintains the value last reported, 1½ ton lead and 1½ ton blende per fathom. No. 2 pitch averages in produce 2 tons lead and 1 ton blende per fathom, and very promising for further improvement. No. 3 pitch, in bottom of level east, is producing 10 cwt. lead and 1 ton blende per fathom. No. 5 pitch is worth 10 cwt. lead and 2 tons blende per fathom. No. 6 pitch is yielding 8 cwt. lead and 1½ ton blende per fathom. No. 7 pitch is worth 8 cwt. lead and 1½ ton blende per fathom. The same value applies to No. 9 pitch. No. 10 pitch is producing 10 cwt. lead and 1½ ton blende per fathom. Brannock Shaft: No. 1 pitch, in back of 60 level east, is yielding 15 cwt. lead and 1½ ton blende per fathom. No. 2 pitch in bottom is worth 8 cwt. lead and 1 ton blende per fathom. No. 3 pitch, in fore-bank of level, is worth 8 cwt. lead and 1 ton blende per fathom. O'Neil Shaft: The 80 level west pitch in bottom is producing 8 cwt. lead and 1 ton blende per fathom. Machinery all in sound condition and working very satisfactorily. The parcel of lead sold realised 3s. 14s. per ton.

GREEN HURTH.—J. Polglase, Sept. 4: The 44, north of Swan shaft, is worth 1½ ton per fathom. No. 1 stop is worth 2½ tons per fathom. No. 2 stop is worth 3 tons per fathom. No. 3 stop is worth 3 tons per fathom. No. 4 stop is worth 3 tons per fathom. No. 5 stop is worth 3 tons per fathom. No. 6 stop is worth 3 tons per fathom. The vein in back of the 30 north is worth 1 ton per fathom. Signs of improvement in the vein in the adit level east. No change in the shaft.

HEALEYFIELD.—J. Trelease, Sept. 8: I have nothing new to report from the old mine this week. Our stopes are yielding about the same quantity of ore as last reported. We are busy carting the 20 tons parcel of ore, and will complete the delivery of it some time next week.

KILLFRETH.—J. Mitchell, J. Tamblin, Sept. 11: We are pleased to say the lode in the 90 west is getting more defined; also very much wetter than it was when last reported. So also is the 70 and west. The lode is very much improved; now worth 7s. per fathom for tin. Our other bargains are much the same as last reported.

KIT HILL GREAT CONSOLS.—Isaac Richards, Sept. 11: At the tunnel level we are still passing through the great lode recently intersected. The width reached is nearly 8 fms., and the composition and character of the lode is tolerably uniform throughout the whole distance—very fine capel and quartz, with a little munda, blende, and traces of tin ore. The distance driven during the past month is 7 fms. 5 ft., making the total distance 306 fms. 1 ft. North Engine Shaft: In the north engine-shaft, sinking below the 100 fm. level, the lode continues to present a very fine appearance, and yields a little tin ore. The distance sunk during the past month is 1 fm. 4 ft. 6 in. In the 100 fm. level the lode is 5 ft. wide, composed of very fine capel and quartz, with peach, blende, and a little tin ore. The distance driven during the past month is 2 fms. 2 ft. 9 in. In the 100 fm. level west of the lode is 5 ft. wide, continuing of an exceedingly promising character, yielding a little tin ore. The distance driven during the past month is 2 fms. 3 ft. 6 in. In the rise in the back of the 88 fm. level west the lode is 4 ft. being carried—composed of capel, quartz, peach, blende, munda, and a little tin ore. The distance risen during the past month is 1 fm. 3 ft. 4 in.

MELLANEAR.—John Gilbert, Sept. 10: The ground in the 70 cross cut, north of the main lode, east of Gundry's shaft, is a little harder for driving; but is still letting out some water, and presenting a kindly appearance. The lode in the 85, west of Gundry's shaft, on the south part has been disordered with cross-bracing. It is now 4 ft. wide, and yielding 1½ ton of copper ore per fathom. In the 100 west of shaft on the main part the lode is 4 ft. wide, and yielding fully 3 tons of ore per fathom. The lode in the 110, west of shaft, is 5 ft. wide, and yielding ½ ton of copper ore per fathom, and some saving work for tin, but very spare for driving. In the 110, east of shaft, the lode is 3 ft. wide, yielding 1 ton of copper ore per fathom, and occasional stones of tin, and letting out a good deal of water. In the 120, east of shaft, the lode is 3 ft. wide, and yielding ½ ton of copper ore per fathom. The lode is 4 ft. wide in the 120, west of shaft, and yielding 3 tons of ore per fathom, and the ground is favourable for driving. The lode in the winze sinking in the bottom of the 33, south of Gundry's shaft, is 1 ft. wide, and yielding some saving work for copper and lead, and going down in very congenial ground. In the rise in back of the 120, east of Gundry's shaft, the lode is 4 ft. wide, and yielding 3 tons of copper ore per fathom. The lode in Gundry's engine-shaft, sinking below the 120 fm. level, is 4 ft. wide, and yielding 2 tons of ore per fathom; this shaft is now down 7½ fms. below the level. We have set 14 pitches to 35 men at an average tribute of 9s. 1d.

NEW DEVON COPPER.—James Neill, Sept. 6: A Shaft: We have at present a plentiful supply of surface water, and the shaft is down to within 3 ft. of the bottom of the 80. Machinery doing good duty. C Shaft: The 50 stop in back of cross-cut north, worked by four men in two directions, east and west, where the strata is very promising, especially so in the latter part, having chlorite and friable garnet intermixed in large quantities; yields 1 ton per cobbie fathom.

MOUNTS BAY CONSOLS.—T. Job, W. Argall, Sept. 6: We have six men sinking the Pengersick shaft from the 20 level, at 5s. 5s. per fathom; in this shaft, at 15s. per fathom. There are eight tribute pitches working at from 12s. to 15s. in 16, tribute of 10s. per fathom. We are looking very well. We shall sell our monthly parcel of tin in the coming week.

NEW CARADON.—N. Richards, Sept. 11: In driving the western cross-cut north of No. 1 lode, in the 50, we have intersected a branch about 10 in. wide, spotted with ore and munda, and from its bearing no doubt it will fall into one of the lodes before us. There is no change to notice in the eastern cross-cut.

NEW KITTY.—Wm. Vivian, Sept. 11: No change to notice at any of the points of operation since the report last week.

NEW LARGO.—T. Gregory, Sept. 10: In the 10 fm. level, west of engine-shaft, the lode over 2½ ft. wide, composed of flookan, lead, blende, and low quality silver ore, reset to drive for the month at 2s. per fathom, and 10s. tribute. The lode in the 30 fm. level, west of engine-shaft, is 2 ft. wide, producing lead, blende, and a little copper ore of good quality, price for driving 35s. per fathom, and 10s. tribute. A more promising end cannot be seen without a course of mineral. Roberts' pitch is producing silver ore equal to 85 ozs. per ton, the branch at times being small then widening out again leads us to hope for a good deposit of silver. No. 2 pitch produces lead, blende, and silver ore equal to 85 ozs. per ton, and is a promising point, and ought to improve.

NEW TERRAS.—R. Eade, Sept. 11: We shall complete the apparatus for raising the water out of the new or eastern shaft the early part of the coming week. The ground in it is of a most congenial character for the production of tin. It will lay open three different lodes. In several places going down below the deep adit the yield is about 1 cwt. of tin per ton of tinstone. We propose, after sinking the eastern shaft 10 fms. deeper, to drive in one of these courses to the engine-shaft; also in other directions if considered advisable, and to lay open a rich run of tin ground. The produce of the great lode is much the same as usual. We have sufficient stock here to supply at least 100 heads of stamps. All other things going on as usual.

NORTH GREEN HURTH.—James Polglase, Sept. 4: There is no particular change in the south level during the week. The deep cross-cut is about the same in appearance as last reported. Nothing new to notice in the Hospital property.

PHENIX AND WEST PHENIX UNITED.—John Truscott, Sept. 11: Setting Report: Seacombe's Shaft: To drive a cross-cut north at the 100, west of this shaft, at 15s. per fathom, to ascertain the value of the lode in this direction. Old Pump Shaft: To drive a cross-cut north at the 120, west of this shaft, at 12s. per fathom, to ascertain the value of the lode in this direction. To strip out the north part of the lode at the 120, near the present end, at 5s. per fathom; lode producing a little copper ore. To stop the back of this level, at 2s. 10s. per fathom; lode worth 12s. per fathom. The 100 to drive west, at 12s. per fathom; lode producing a little tin. To strip out the north part of the lode at the 80, close to the present end, at 3s. 15s. per fathom; lode worth 10s. per fathom. No. 1 stop in the back of this level, at 4s. per fathom; lode worth 10s. per fathom. No. 2 stop in the back of this level, at 4s. per fathom; lode worth 10s. per fathom. The 60 to drive west, at 12s. per fathom; lode worth 10s. per fathom. No. 1 stop in the back of this level, at 2s. 10s. per fathom; lode worth 10s. per fathom. No. 2 stop in the back of this level, at 2s. 10s. per fathom; lode worth 10s. per fathom. No. 1 stop in the back of this level, at 3s. per fathom; lode worth 10s. per fathom. No. 2 stop in the back of this level, at 3s. per fathom; lode worth 10s. per fathom. Western Mine, New Engine-Shaft: The 100 to drive west, at 12s. per fathom; lode large, but unproductive. The 70 to drive west, at 11s. 10s. per fathom; lode producing a little tin, but not sufficient to value. The 60 to drive west, at 12s. per fathom; lode a promising character, and worth for the part carried (6 ft.), 8s. per fathom. The 50 to drive west, at 10s. per fathom; lode worth 15s. per fathom. To sink a winze in the bottom of this level, at 13s. per fathom; lode worth 10s. per fathom. No. 1 stop in the back of this level, at 3s. 15s. per fathom; lode worth 12s. per fathom. No. 2 stop in the back of this level, at 3s. 15s. per fathom; lode worth 12s. per fathom. No. 3 stop in the back of this level, at 3s. 15s. per fathom; lode worth 12s. per fathom. No. 4 stop in the back of this level, at 3s. 15s. per fathom; lode worth 12s. per fathom. No. 5 stop in the back of this level, at 3s. 15s. per fathom; lode worth 12s. per fathom. No. 6 stop in the back of this level, at 3s. 15s. per fathom; lode worth 12s. per fathom. No. 7 stop in the back of this level, at 3s. 15s. per fathom; lode worth 12s. per fathom. The 20 to drive west, at 3s. per fathom; lode worth 15s. per fathom. No. 1 stop in the back of this level, at 2s. per fathom; lode worth 15s. per fathom. No. 2 stop in the back of this level, at 2s. per fathom; lode worth 15s. per fathom. No. 3 stop in the back of this level, at 2s. per fathom; lode worth 15s. per fathom. 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The Mining Market: Prices of Metals, Ores, &c.

METAL MARKET—LONDON, SEPT. 12, 1884.

IRON.	2 s. d.	2 s. d.	2 s. d.	TIN.	2 s. d.	2 s. d.	2 s. d.
Fig. 600, L.O.B. Clyde.	2	2	2 1/2	English, ingot, L.O.B.	84	1	0
Scotch, all No. 1.	2	2	2 1/2	bars	85	10	0
Wales, L.O.B. Wales	5	0	0	refined	86	10	0
in London.	5	10	0	Australian	82	2	6
Stafford.	6	5	0	Banco	82	0	0
in Tyne or Tees	5	0	0	Straits	82	0	0
Swedish, London.	9	0	0	Copper.			
Rails, Welsh, at works	5	0	0	Tough cake and ingot.	58	0	0
Sheets, Staff., in London	7	5	0	Best selected	58	10	0
Plates, ship, in London	7	10	0	Sheets and sheathing	58	10	0
Hoops, Staff.	8	5	0	Flat Bottoms	58	10	0
Nail rods, Staff., in Lon.	6	5	0	Wallaroo	nom.		
English spring	12	0	0	Burra, or P.C.C.	60	0	0
cast	10	0	0	Other brands	nom.		
Swedish, keg	13	0	0	Chili bars, G.O.B.	51	2	6
fag, ham.	13	10	0	QUICKSILVER.			
Rails at works	12	6	5	Flake, 75 lbs., war.	5	11	0
Light, at works	5	12	6	PHOSPHOR BRONZE.			
English pig, common	11	0	0	Alloys I. and II.	117	0	0
" L.B.	11	2	6	" V.	119	0	0
" W.B.	11	5	0	" VI. and VII.	127	0	0
sheet and bar	12	6	12	" XI.	105	0	0
red	13	5	0	" Duo A, Duo B	105	0	0
patent	14	10	0	BRASS.			
white shot	14	0	0	Wire	6 1/4	d.	—
Swedish	13	6	5	Sheets	8 1/2	d.	—
Metal per cent.	—	—	—	Yel. met. sheath. & sheets	5 1/2	d.	—
Ore 10 percent per ton.	—	—	—	Tin-plates	1	1	0
Silesian ordinary brands	14	5	0	Charcoal, 1st quality	0	18	0
special brands	14	10	0	2nd quality	0	18	0
English Swansea	15	10	0	Coke, 1st quality	0	16	0
Sheet zinc	17	10	0	2nd quality	0	15	0

At the works, 1s. to 1s. 6d. per box less for ordinary; 10s. per ton less for Canada; 1X 6s. per box more than 10 quoted above, and add 6s. for each X. Terms plates 2s. per box below tin-plates of similar brands.

REMARKS.—The changes that have taken place in the Metal Market during the past week have not been very important, and the amount of business done has remained restricted. Unless some recovery does soon take place it is to be feared there will be no genuine revival this year. Spurts there may be, fluctuations of a favourable nature may arise, not only from the movements of the operators, but because there are certain features in the market which strongly indicate a better state of affairs; but against this there are features of an adverse character, which up to the present have proved too powerful to permit of any permanent advance in prices. The chief unfavourable feature in the market just now is lack of confidence. Credit is good, and there is plenty of confidence in the financial stability of the various firms who deal in metals; but there is a want of confidence, arising from fears that something unexpected may crop up, that supplies may come forward in excess of requirements, and that prices may continue to erode away. It is this feeling of hesitation, of nervousness, of anxiety, that checks business and prevents the full development of trade, and until it is removed we must expect a continuance of depression and inactivity; and so deeply is this feeling of uncertainty rooted in the minds of the trade that not even the many favourable influences are allowed to bear any impression upon the market, though upon the most confident investigation they may be seen to be numerous, and working for the ultimate good of the trade. Another cause to which the present dulness in a trade may be attributed is the impoverished state of traders generally. They have had to submit to so many losses and sacrifices during the past few months that it is evident that many of them must be very much crippled from recent disasters, and have not the power to continue purchasing, whilst others who, perhaps, have only been made to feel the pinch a little keenly, consider it advisable not to increase their engagements until there is some definite prospect in view of a tolerably speedy revivification.

Operators hold aloof, consumers and shippers do not purchase beyond their most urgent requirements, so that they may be enabled to avail themselves of any further fall that may be effected, a common argument being that although prices are so low as hardly likely to further recede, or at all events very immaterially, yet the time is not as yet considered sufficiently ripe for any restoration. This argument seems to be well backed by current prices, which show not the slightest tendency to advance. At the same time, in the midst of the general complaints, it must not be forgotten that in certain branches of the trade some very fair orders have been booked, which is said will give constant employment to some of the works for the next few months; and it is also to be noted that in such instances sellers are stiffer in their quotations. For instance, copper-smelters have booked some very fair orders for Indian sheets, and are reported to be full of work. Ship-building is said to be temporarily brisker from Government orders for the Sudan; sheet-iron is in rather better request, and in some parts of the country there is rather more doing in certain other classes of iron, whilst in tin-plates there are a very fair number of transactions being carried through, and in spelter there has been a large business doing. The improvement is by no means general as yet, but there is a slight start in the right direction, and certainly those who are holding their orders in abeyance for reduced rates would apparently do well to consider, instead of hesitating too long, the advisability of booking their orders at once before the improvement spreads itself further, and advanced prices be generally demanded.

COPPER.—This market has remained fairly steady, but at the commencement of the week the tendency was towards reduced rates, although yesterday there was a slight change for the better. This little turn for the better is easily accounted for, the only surprise being that it did not come before. We have on previous occasions brought under the notice of our readers the constantly improved state of this particular market, and drawn attention to the very low prices, notwithstanding the improved statistics, and the very satisfactory genuine business that has been done in this metal, as is clearly evidenced by the large deliveries that have repeatedly been recorded, and it may be interesting to see what reason there is to hope and expect that such large deliveries may be kept up. All the smelters are reported to have freely booked orders, and enough to keep their works in full operation for the next month or so, by which it may be assumed that demand for the raw material must necessarily be sustained, if not further augmented.

Large orders that smelters have chiefly secured have been for Indian sheets, both copper and yellow metal, and even now at the advanced rates there is difficulty in obtaining any speedy delivery. Therefore, when the manufacturers were so well booked with orders and when they were pushing up their prices it was a little difficult to comprehend why prices of Chili bars should have receded, and more particularly when, according to the most recent advices from Valparaiso, only light charters had been advised, and stocks of that particular kind of copper, as well as other sorts, had been materially reduced. Further charters will be announced next week; and if they are again light, it is scarcely probable that holders will continue to let purchasers effect their contracts at such extremely low prices as are now current; and it certainly appears a little dangerous to keep prompts open.

IRON.—The condition of this market remains very unsatisfactory, for business is not only still very small, but prices also remain most unremunerative. In addition to these unfavourable features, which have long been prominent characteristics of the market, there is a new disturbing influence of somewhat serious wages disagreements almost all over the country. Difficulties exist in South Staffordshire and East Worcestershire; and as both the men and masters seem determined to stand it out, it is quite impossible to see the ultimate termination of

the disputes. Amongst the ironworkers business is very much curtailed, owing to the low prices, and the advices go to show that the same condition every day, numerous cases of closing works. The shipbuilding trade is rather brisker, owing to various Government orders for the Sudan Expedition; but this improvement is not expected to be more than temporary. It will thus be seen that the state of the trade is not satisfactory, and that its condition is sufficiently sensitive to warrant buyers purchasing sparingly, as there is a fair chance of being able to buy hereafter at slightly reduced rates, though any material further reduction is not at all likely, as prices are already too low to give any return to manufacturers and makers. Compare with corresponding periods of previous years, and they appear particularly cheap; but this, instead of forming any temptation, seems rather to deter operators from coming forward and making purchases, as it is too strong an evidence of the very bad state of trade.

When prices are much higher than they are now operators, as a rule, much more plentiful, simply because then the tone is invariably much more cheerful, and the chances of speedily turning over at a profit much more probable. Now, however, whilst prices are considerably safer, yet holders will, doubtless, have to wait some time before they are able to secure any profit at all. According to advices from Scotland, the shipments last week were rather better than what they have recently been, and as those for the corresponding week of last year were somewhat small the comparison at last appears favourable. The Glasgow warrant market opened steadily on Monday, and business was done between 41s. 6d. and 41s. 5d., and on Tuesday the tone was quiet, and prices easier, transactions being recorded between 41s. 4 1/2d. and 41s. 3 1/2d., while on Wednesday there was more business doing, and prices were firmer, 41s. 3 1/2d. being the quotations. Yesterday the market was steady; there was a fair business, and prices were firm at 41s. 6d. to 41s. 6 1/2d., and the closing figure this afternoon is 41s. 6 1/2d. to 41s. 7d. The shipments last week were 12,978 tons, against 12,894 tons for the same week of last year, being an increase of 84 tons, and which makes the total shipments for the whole of this year 387,746 tons, against 455,727 tons for the same week of last year, and 446,291 tons for the similar period of 1882.

The number of furnaces in blast is 95, against 94 last week, and the public stock has been further reduced by 835 tons, and is now estimated at 594,982 tons, against 585,867 tons last week. The imports of Middlesbrough pig-iron into Grangemouth last week were 5313 tons, against 6140 tons for the corresponding week of last year, and which is a decrease of 827 tons, and thus making a total decrease for the whole of this year compared with last of 6697 tons. Upon the Middlesbrough market business is confined within the most narrow limits, and the prospect is considered most discouraging. In quotations there is no change, makers' combination price being 37s. for No. 3, and second-hand lots are offering at 35s. 4 1/2d., whilst there is a free supply of forge iron at 34s., buyers offering rather less. There is an absence of buyers for warrants, the nominal quotations being 36s. for No. 3. The manufactured trade shows no improvement, and the present prices are 5s. for ship-plates, 4l. 15s. for angles, 5s. 6d. for bars, and 6l. 15s. for sheets.

According to advices from Wolverhampton the market there is rather better, and for sheets prices are decidedly stiffer, and there is more business doing. The Birmingham market is likewise said to show a further improvement; but here the better tone is chiefly in the pig-iron branch of the trade, some large contracts having been effected for forward delivery, chiefly for Derbyshire and Lincolnshire brands. The demand is at last said to be fully on a level with the supply, and prices are quoted up to 2s. 6d. per ton. There is also an increased demand for manufactured, and prices are dearer, whilst it is said that the only thing now which dulls the tone and prevents the prospect from being encouraging is the continuance of the colliers' strikes.

TIN.—This market continues to be influenced by the action of operators, but this week the tendency of prices has been downwards. This is a complete change to what we had to report last Friday, and it would seem that operators who were purchasing with a tolerable amount of freedom last week, and causing prices to advance have been taking their profits this week, and thus making prices to recede. As prices have now fallen again to about what they started from, further profits, except to the "bears," are impossible; and further than this, it is scarcely probable that all the purchases that were made a week or more ago have been turned over to good account. Under these circumstances a sudden turn in the market may again be shortly effected, and the changes in this metal are invariably sudden, so that it is just as likely there will be advancing quotations during the next week as receding.

Nothing fresh has arisen to cause the change that has been made, no new statistics have been published to show any altered stocks, or no advices to indicate any extra supplies or diminished deliveries, and the movements can only be attributed to the movements of operators, and, as in the past, so in the future, the market will be regulated. Advices of the deliveries during the first half of the month will be to hand next week, and according as they show large or small figures, so speculators may be guided in their immediate future action; but it is impossible to say for certain, for often their tactics are quite unaccountable when taken in connection with the statistics and other influential features which invariably affect the market. A Dutch sale is announced to be held at Rotterdam on Sept. 30, when 22,200 slabs of Banca will be offered for disposal. The market for English is quiet, and prices continue to be regulated in accordance with those for Australian and Straits.

SPELTER.—Large transactions have taken place, and there is a firm market, and we quote ordinaries at 14l. 5s., and specials at 14l. 10s. per ton.

LEAD is quiet, and business has been done in Spanish at 10l. 12s. 6d. spot, and 10l. 7s. 6d. forward, while English pigs are quoted at 11l. to 11l. 2s. 6d. per ton.

STEEL.—With the exception of a few fair orders which have been placed for rails the market remains quiet and unaltered.

TIN-PLATES.—A fair business continues to be transacted, and prices are strong.

QUICKSILVER.—The Board of Trade Returns for August are as follows:—

Imports—August	1,172	1883	1,234
Eight months	43,163	52,982	55,928
Exports—August	4,184	2,343	3,150
Eight months	25,532	22,264	35,749

The shipments in August were less than in the last few months, but the total since January compares favourably with previous years. The market gains strength, and the importers quote now 5l. 11s., but it is doubtful whether they will accept this price for further quantities.

IN THE MINING SHARE MARKET the dealers have been chiefly engaged in the settlement of the usual fortnightly account, but a fair amount of business has also been transacted in several prominent mines, and in some at advanced prices. The mines dealt in have included Dolcoath, East Pool, West Kitty, Prince of Wales, Old Shepherds, Oscar, New West Caradon, New Kitty, East Blue Hills, and a few others.

TIN advanced early in the week, but did not maintain the rise, though it has been pretty firm. In shares rather more has been doing, but prices are mostly nominal. Carn Brea, 34 to 3 1/2; Cook's Kitchen, 9 1/2 to 10 1/2; Dolcoath, 72 to 74; East Pool, 40 to 41; East Blue Hills, 4s. to 6s.; Killifreth, 1 1/2 to 2; New Kitty, 13 to 14; South Conderrow, 5 1/2 to 9; South Frances, 6 1/2 to 7 1/2; Tincroft, 8 to 8 1/2; West Basset, 2 1/2 to 3; West Frances, 5 1/2 to 5 1/2. Wheal Pevor, 1 1/2 to 2; a communication has been effected between the 16 cross-cut and the level driven west of winze in the bottom of deep adit on the new tin lode, and this, the agents state, has laid open a good section of stoping ground. The lode in the winze is worth 15l. per fathom, and increased returns may be expected in the future.

Wheal Grenville, 6 to 6 1/2; the accounts for the quarter show a balance in favour of the mine of 1383l. 3s. 1d., out of which a dividend will be declared. The tin sold (112 tons 12 cwt.) realised 5436l. 12s. 5d. The agent reports that, "taking the mine on the whole, it is working fairly well." West Kitty, 10 to 10 1/2; Wheal Agar, 16 1/2 to 16 1/2; Wheal Basset, 2 1/2 to 2 1/2; Wheal Kitty (St. Agnes), 1 1/2 to 2; Wheal Uny, 1 1/2 to 2. At St. Just United, the accounts for the quarter showed a loss of 133l. The tin sold (78 tons), with other credits, amounted 3869l. The liabilities amounted to 7592l., but it was not thought necessary to make a call. South Kitty, 7-16ths to 9-16ths; Polberr, 1 1/2 to 1 1/2; Trevaunance, 1 to 1 1/2; West Godolphin, 1 to 1 1/2; West Phoenix, 1 1/2 to 2.

COPPER is firm, and rather more business has been doing in shares. Bedford United, 1 1/2 to 1 1/2; Devon Great Consols, 2 1/2 to 3; Devon Friendship, 2s. to 3s.; Gunnislake (Clitters), 7-16ths to 9-16ths; Marke Valley, 1 1/2 to 2; Mellanear, 1 1/2 to 2. Prince of Wales has been largely dealt in and in demand, and leave off 1 1/2 to 2. A special report from Capt. Knott will be found in another column. The lode in the 102 east continued to the last taking down worth 50l. per fathom. Wheal Crebor, 1 1/2 to 1 1/2; the points here continue about the same as last week, West Crebor, 1-16th to 1 1/2. New West Caradon, 3-16ths to 1 1/2, call paid; at the meeting a call of 6d. per share was made. The accounts showed assets over liabilities 121l. 5s. 2d., including estimate of 16 tons of copper ore, valued at 96l. West Caradon, 1-16th to 1 1/2; at the meeting here a call of 1s. 6d. per share was made. The accounts showed liabilities over assets 179l. 1s. 11d., including the estimated value of 65 tons ore for sale, 240l. The various points in the mine, the agent states, are looking more encouraging than for some time past, and the 38 in Gilpin's lode may open out a good piece of ore ground. South Caradon, 1 1/2 to 2; New Caradon, 1 1/2 to 3-16ths; West Seton, 3 to 3 1/2.

LEAD.—Very little business has been done in lead shares, and for the most part prices are nominal. Great Laxey, 9 to 10; Roman Gravel, 3 to 3 1/2; Leadhills, 1 1/2 to 1 1/2; New Langford, 1 1/2 to 1 1/2; Old Shepherds advanced to 1 1/2; East Rose, 1 1/2 to 1 1/2; Weardale, 1 1/2 to 1 1/2.

FOREIGN MINES have not been in large demand and in some cases lower prices have been accepted. The Spitzkop (Lydenburg) Gold Mining Company received telegram this (Friday) morning—Have

struck rich rotten reef near Silos. The shares are quoted 1/2 to 1; Akankoo, 5-16ths to 7-16ths; Alamillos, 1 1/2 to 1 1/2; Almada and Ferreira, 1 1/2 to 1 1/2; Anglo-African Diamond, 1 1/2 to 2 1/2; Asia Minor, 1 1/2 to 1 1/2; Birdseye, 1 1/2 to 2; Bratsberg, 1 1/2 to 1 1/2; Callao Bis, 1 1/2 to 7-16ths; Cape Copper, 43 to 45; Chile Gold, 1-16th to 3-16ths; Chontales, 3-16ths to 1 1/2; Colombian Hydraulic, 7-16ths to 1 1/2; Colorado United, 1 1/2 to 1 1/2; Copiapo, 2 1/2 to 2 1/2; the directors have declared an interim dividend for the current quarter of 1s. per share, payable on Sept. 15; Fortana, 2 1/2 to 3 1/2; Frontino and Bolivia, 1 1/2 to 1 1/2; Kapanga, 1 1/2 to 1 1/2; La Plata, 3-16ths to 5-16ths. Lisbon-Berlyn, 1 1/2 to 1 1/2; a full report of the meeting yesterday will be found in another column. Marbella Iron, 2 to 2 1/2; Mason and Barry, 10 1/2 to 10 1/2; Mysore Gold, 1 1/2 to 1 1/2; New Callao, 2s. to 4s.; New Emma, 1 1/2 to 1 1/2; New Potosi, 1 1/2 to 1 1/2; Organos, 9s. to 11s.; Orita, 1 to 1 1/2; Oscar (fully-paid), 1 1/2 to 1 1/2; 10s. paid, 1 1/2 to 1 1/2; Pestarena, 1s. to 2s. Port Phillip, 1-16th to 1 1/2; during July 2077 tons of quartz were crushed, at a loss of 479l. Quebrada Railway, 3 1/2 to 3 1/2; Richmond, 3 1/2 to 3 1/2; Rio Tinto shares, 16 1/2 to 16 1/2; Ruby and Dundberg, 1 1/2 to 2. Santa Barbara, 1 1/2 to 1 1/2; the produce for August was 3050 oits. of gold, worth, at 8s. 6d. per oit, 1296l.; Schwab's Gold, 6 to 6 1/2; St. John del Rey, 60 to 70; Tharsis, 6 to 6 1/2; Tolima, 6 to 7 ex div. United Mexican, 3 1/2 to 3 1/2; the telegram states—Excess of returns over outlay in the mine of San Cayetano de la Ovejera, for the week ended Sept. 6 was 7600l., and in the El Diamante 3600l. Profits on the hacienda of Duran for the month of August, 81400l. Victoria, 1 1/2 to 1 1/2; West Callao, 2s. to 4s.

SOUTH AFRICAN DIAMOND MINES.—Our Kimberley Correspondent sends us telegram by Eastern and South African Cables—Kimberley, Sept. 9: The loose shale lying on north side of Kimberley Mine, which fell on the 5th of November last, has moved forward this morning and carried away both shafts of the Central Company down to blue ground. The movement continues threatening to cover the remainder of the company's claims as far as the south reef, and will probably involve the whole mine with exception of the high ground at the west end and high claims of Rose Innes and South-east companies lately amalgamated with Central Company. Underground workings are intact, though communication is temporarily stopped. Only gear at work is in Rose Innes ground, which is not likely to be affected. Central Company has commenced a new shaft outside to pierce the hard rock and tunnel below into the mine for permanent work.—RICHARDSON.

The Market for Mine Shares on the Stock Exchange has been again excessively dull; but as there has been a marked improvement to-day in general home securities, dealers are in much better spirits as to the immediate future. The price of metals continues low, and lead is still lower, but both copper and tin are decidedly firmer, and some few sales have been effected at an advance of about 5s. per ton. The shares in several new concerns, which had been looked upon as virtually defunct, have again been heard of, and there is no doubt that a very slight improvement in the metal trades, and the declaration of a few more dividends than we have been accustomed to lately, would lead to a general revival. In the iron trade the improvement has already commenced, so that the prospects are encouraging.

Our usual telegram from Cornwall this evening says:—During the past week the state of the Cornish Mine Share Market has been variable. In sympathy with the lack of steadiness in the tin market most of the leading shares remain in a satisfactory condition, as far as the mines are concerned. Shares, however, do not show any material alteration, the general tendency being towards firmness. Wheal Grenville report is considered very satisfactory, the profit shown being 72 1/2. A 2s. 6d. dividend is anticipated. At New Cook's Kitchen yesterday a loss of 843l. and a debit balance of 2951l. was reported, and 7s. per share called up. The manager stated that they were 80 fathoms from the great cross-course. At South Crofty yesterday a loss of 1310l., increasing the unfavourable balance to 5213l. was reported. A call of 12s. 6d. per share was made. It is expected that greater quantities of tin would be met with as the mine gets deeper. At Cook's Kitchen prospects are reported to be much better, and shares have advanced. A 5s. dividend is thought probable at Wheal Agar's next meeting.

Devon Great United, 1 1/2 to 1 1/2; the lode in the 120 fm. level east and west is 3 1/2 to 4 ft. wide, and producing some good quality copper and mudiore ores, as well as the 60, west of Watson's shaft. Devon Great Consols, 3 to 3 1/2; the monthly sampling of copper ore is about 800 tons. So far as seen in sinking below the adit at Wheal Maria, the lode is 3 ft. wide, and yields some good quality copper and mudiore ores, and some important discoveries may be expected in this part of the mine. Drakehills, 1 1/2 to 1 1/2; a favourable report has been received from the new manager this week, and as will be seen therefrom a new and important lode is being opened on from which good results are looked for. It is expected that better progress will be made in clearing out the shaft from the 92 to the 100. Kit Hill, 1 1/2 to 1 1/2; at the tunnel level they are still passing through the great lode, which as far as seen is about 48 ft. wide. New Cook's Kitchen, 1 to 1 1/2; at the meeting, on Thursday, the accounts for the 16 weeks showed a loss of 843l., increasing the debit balance to 2951l. A call of 7s. 6d. per share was made. Ruby, 1 1/2 to 1 1/2; a small seam of fair grade ore having been encountered in the Home Ticket, which will be duly explored. The Lord Byron tunnel is nearing completion, and the ground hereabouts is considered to be the best prospect in the mine at present.

South Crofty, 2 1/2 to 3; at the meeting, on Thursday, the accounts for the 16 weeks showed a loss of 1310l., increasing the debit balance to 5213l. A call of 12s. 6d. per share was made. South Devon United, 1 1/2 to 1 1/2; the sale of copper ore—290 tons—will be made next week. The quality of this ore being much better good prices are expected for it. A satisfactory report has been received from the manager at the mine, and which will be read with interest. There is a good lode in Martin's shaft, and a good course has been driven through for about 20 fms.; the present end of level (120 fm. level) being worth 14l. per fathom, and improving. In the back of this level one stoep is worth 14 l. per fm., and another 10l. per fathom.

In Lead Mine Shares there is absolutely nothing doing, whilst the price of the metal continues to decline; it is about 2s. 6d. cheaper than last week. Roman Gravel, 3 to 3 1/2; the mine continues to open out well, and 100 tons of lead ore were sold on Thursday last, realising 692l. 10s. Another sampling of lead and blende ores will be made next week. Leadhills, 1 1/2 to 1 1/2; the levels driving south have improved in the production of ore. The general meeting of shareholders, we are informed, will be held early next week, when a favourable statement of accounts and report will be submitted. The lead market in Scotland is reported to be firmer.

Shotts Iron, 3 1/2 to 3 1/2; at the annual meeting on Wednesday the report stated that the net profit for the year was 3511l. 9s. 2d., of which the directors recommended that there be carried to next year's account the sum of 802l. 3s., less a dividend of 5 per cent., amounting to 276l. 10s., on the preference shares. The directors have written off the sum of 20,000l. for depreciation, being 2709l. 6s. 2d. taken from last year's profits, added to the sum of 17,290l. 13s. 10d., being the amount of undivided profits at June 30, 1883, after payment of the preference dividend for the year to that date. From the balance-sheet it appears that the undivided profits amount to 802l. 3s.; that the outstanding accounts due to the company amount to 15,752l. 6s. 8d., and that the expenses of general management, including salaries, directors' fees, &c., amounted to 4129l. 17s. 8d. The profit on pig-iron was 11,591l.; on coal, 6054l. 11s.; and rents, lands, and houses brought in 2017l.

The British Land and Mortgage Company held a meeting, from which reporters were excluded, on Wednesday. The Chairman, Sir Stuart Hogg, expressed regret that the report was not written requesting that the company should go into liquidation. If that course were pursued a call of 2l. would have to be made by the liquidator. Taking a retrospective glance at the history of the company, he

ROYAL MINING ACADEMY AT CLAUSTHAL (GERMANY).

73RD COURSE OF LECTURES, 1884-1885.

THE LECTURES OF THE WINTER HALF WILL BEGIN ON THE 18TH OCTOBER, 1884.

Programmes to be had (gratis) of the Principal—

DR. v. GRODDECK,
Counsellor of Mines.

GEORGE ELLIOT & CO.,

(GEORGE ELLIOT & Co. since 1864, and previously
GLASS, ELLIOT & Co., Makers of the First Atlantic Cable).

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SPECIAL IMPROVED PLOUGH STEEL,
PATENT STEEL AND IRON WIRE ROPES

For Colliery, Mining, Agricultural, and General Purposes.

ROPES FOR AERIAL TRAMWAYS,
SHIPS' RIGGING.COPPER LIGHTNING CONDUCTORS,
GALVANISED STRAND,
SPECIALLY FLEXIBLE ROPES, &c., &c.Care is given to ensure the Ropes being constructed in the way most
suitable for their particular work, and by the use of specially
selected and tempered metal, the greatest possible uniformity
is obtained.DENT'S NEW ILLUSTRATED CATALOGUE OF
WATCHES AND CLOCKS AT
REDUCED PRICES sent Post Free on ap-
plication to E. DENT AND CO., Makers to
the Queen, 61, STRAND, LONDON, W.C.;
or 35, ROYAL EXCHANGE, E.C.

Notices to Correspondents.

OSCAR GOLD—"F. H." (Peterborough).—Your suppositions as to the relative position of purchasers of vendors' and of partly paid shares are erroneous and misleading. You are correct in stating that the vendors' fully paid shares can be bought for less than the shares 10s. paid. The price of the latter was called 15s. last week, or 50 per cent. premium, which indicates that at least someone supposes that the mine will make profits. Now, the dividend of 2125s. in all as dividend will place all shares on an equality; hence it becomes a question with a purchaser whether he will purchase the prospective right to a fully paid share free from further liability for 10s. or 12s. 6d., or whether he will give 15s. for a share liable to 10s. call. There is certainly less risk in purchasing the fully paid share, because if the 2125s. divisible profit be quickly earned, the transfer can be completed; if it be not quickly earned the 10s. call must be paid, and the fully paid share will have cost the holder 25s. instead of 12s. 6d., while both will be equally unuseful. It is believed, however, that the mine will speedily be able to pay the 1s. per share dividend, which will make the vendors' shares transferable, so that there is no necessity to make invidious comparisons.

MINERS' WAGES—"H. K." (Manchester).—We shall be glad to give attention to anything you may forward for publication upon your own responsibility, but we could not at the moment recommend a general advance of miners' wages, because the result of adopting such a recommendation would be that most of the mines now working would have to stop altogether, and the miners would be left entirely without employment. You say: "If the adventurers do not immediately raise miners' wages there will, within six months, not be a young man left working in the mines, as they will go to America, where they can get twice the money and plenty of meat to live upon." Now, is it not a fact that mining depression is as great in America as in Cornwall, and that the working miners are complaining that the labour market is so overstocked that they can scarcely live? If a miner can improve his position, by all means let him do so; but let him obtain reliable information before acting. In many mines at present the salaries and wages of the executive and workmen are supplied entirely from calls, and it is unlikely that while adventures are losing money every month they will advance wages, and thus increase their loss.

MINE INSPECTION, AND PROMOTERS' PRACTICAL (?) REPORTS.—Science graduates and A.R.S.M.'s are no more infallible than other people; but they have at least the advantage of being systematically educated, and of having been informed of ascertained facts recorded by competent workers, and taught how usefully to apply the record. The so-called practical reporter is usually ignorant, conceited, and not always truthful as to the nature of what little experience he may have had. Few are interested in the personal squabble constantly going on between taught and untaught men, but no one should engage a man of either class until he has carefully and thoroughly studied Vol. LIII., page 303, of the *Mining Journal*. It requires something more than eating tinned tomatoes to make a tinman.—**TRUTH.**

MINER'S INCH.—In Notices to Correspondents of last week there is an error (not in the gallons, but in the tons) in the calculations of the volume of water in a miner's inch. One miner's inch should be over 50 (fifty) tons per 24 hours, hence allowing that 17 tons of water removes 1 ton of rock, 200 miner's inches per 24 hours should remove about 600 tons of rock. But in the average of sluicing operations much less than 17 tons of water to the ton of rock will answer probably 10 tons is ample.—**C. HANLEY.**

Received—"T. P." (Birmingham): Fully noticed, as desired—"F. J. H."—"K. B. and Co."—"F. H." (Oswestry): Never use foreign quotations, especially from a language you do not understand, nor poetry; all business matters can be expressed in plain English prose. You write: "Until that result in an fait accompli," which is neither French nor English; it should be: "becomes an fait accompli."—"J. W. E.": The reports of the concerns are only circulated among shareholders; the stability of the enterprises is doubtful, and they are involved in mystery—"Nemzetközi hírdetések felvételi iroda L. L.": Attended to—"S. B. D." (Plymouth)—"J. A. M."—"S. F."

THE MINING JOURNAL,

Railway and Commercial Gazette.

LONDON, SEPTEMBER 13, 1884.

COAL-CUTTING MACHINERY.

Somewhat quietly and unobtrusively coal-cutting machinery appears to be making its way, although it has not been overpowered by the warmth of the support it has received from those the machines are intended to benefit. It is only within the last 15 or 20 years that coal-cutting machinery has been prominently brought under the notice of colliery owners, although the idea is certainly anything but a new one. So far back as 1761 MENZIES took out a patent for a pick machine, but it was not much thought of at the time. In recent years the Messrs. FIRTH, of Leeds, have greatly improved upon the pick idea of more than a century ago, and their machines, with single and double picks, have been in most successful operation at collieries at West Ardsley, near Leeds, for a considerable time past. They have on an average done as much work in a given time as ten or a dozen miners, bringing the coal down in a large and marketable state, and as the machines are worked by compressed air, the exhaust

can be so utilised as to keep the place where the work is going on in a pleasantly cool state. But in addition to the pick machines several have been introduced upon a different principle, some of them consisting of a series of cutters arranged on a rotating wheel, and worked by compressed air. These scrape the face of the coal, and can be driven until the holing is from 3 to 4 ft. through.

One of the earliest of these machines was that of HURD and SIMPSON, but of which little has been heard of late. Another upon a similar principle was brought out by GILLOTT and COPELEY, and has been worked at the Wharfedale Collieries for several years. This machine has also been introduced of late into collieries in Derbyshire and Nottinghamshire, and with success; indeed, so successful have they been that Messrs. GILLOTT and SON have now a place in Barnsley where the machines are made, thus giving satisfactory proof of their efficiency. The machines of WINSTANLEY, on a somewhat similar principle, have had a fair run in Lancashire, and have done good work. The same may also be said as regards RIGG and MEKLE-JOHN'S machine, which have the cutters also arranged on the periphery of a rotating disc, and cut out a groove similar to what is made by a circular saw. BAIRD'S well-known Scotch machine has done some good work, the cutters being fixed to a travelling pitch chain, and working with great ease. The new American machine, the Lechner, has been highly spoken of, and is mounted on a revolving bar driven by pitch chains. We are not aware that as yet it has been tried in this country, although on the other side of the Atlantic it is said to have been a very great success, as is the case with many American inventions which we on this side only know by report. As before stated, our English machines are now making steady progress, and are found highly advantageous in tolerably thick seams where there is a long face, so that the work can be carried out on the longwall system. In thin and hard seams they are also most advantageous, as a much smaller groove is made than is the case with the pick, so that a greatly increased percentage of large and marketable coal is secured. With an improvement in the coal trade, which is now confidently looked forward to, there is every reason to believe that coal cutting machinery will be far better known in all our mining districts than it has hitherto been.

MUTUAL INTERESTS, AND COMMERCIAL REVIVAL.

The labour difficulty is still the vexed question of the day. In several parts of the country labour is arraigned against capital, and capital against labour. The breach has been, and still is, subservient of the best interests of both. These internecine struggles have driven from our shores millions of capital in the shape of manufactured goods, and thousands of our most skilled artisans and able-bodied men have reluctantly sought employment in other lands, and carried their practical knowledge into competition with the British manufacturer. The warfare to-day is as open and defiant as ever. The severe competition and low prices compel the masters to enforce a reduction of wages, whilst the miserable pittance earned in some of our great metallurgical and mining districts is scarcely sufficient to keep the man and his heavy family from starvation. The efficiency of capital and labour must be seriously impaired when a considerable portion of their strength is spent in such internecine contest. But how to reconcile these interests, and produce harmony, is the great problem which has hitherto taxed the best efforts of philanthropists of all classes, and is one upon which the future of our great mining and manufacturing interests still depends to a very great extent. Employer and employed must feel that they have a direct interest in the success of the work in which they are engaged before a permanent basis of prosperity can be established and before the English manufacturer will be able successfully to cope with the gigantic strides which are being made by other nations. Many of the principal working men's advocates contend as a solution of all strikes and trade difficulties that the working classes should have more direct interest and benefit in the wealth which they create than they have at the present moment. Granting there is a good deal in this contention, those who find the capital and the brains ought to be well and highly remunerated; but the contention of the working classes is that the employers receive too large a return for their capital and skill as compared with labour. Now, although we admit that there are instances where large gains are still made by capitalists, and where the employees are not proportionately rewarded for the hard physical toil and long hours of labour imposed upon them, still, on the other hand, there are too many cases where capitalists have lost every shilling they once possessed by embarking in trade and manufacture.

"Verax," in the *Times* of Sept. 4, in alluding to the strike of the colliers in the South Staffordshire district, and which has continued since June 28, shows that the rate of wages, all things considered, is 5s. 1d. per day of eight hours; and he states, as a fact, that "we and many others in our district have been keeping our works open for some years past not only without making any profit but at considerable yearly loss."

But how can this vitally important question be permanently settled, and that upon a basis which will be satisfactory to both parties—the capitalists, on the one hand, and the representative of labour on the other? We would premise by saying that no good can possibly come by such tall talk as the "tyranny of the money bag," and "all wealth is due to labour, therefore to the labourers all wealth is due." The great bulk of the manufacturers of this kingdom work as hard and as long—not physically, of course, but mentally—as any labourer, to say nothing of the anxieties and worries of business; and this increasing toil is not altogether for their own aggrandisement, but to avoid bankruptcy, and provide a continuity of work for those in their employ. The proprietors of large works—factories, workshops, and mines—are, therefore, justly entitled not only to a fair and adequate return upon the capital invested in the erection of the machinery and the keeping the works in order, but also the "brain capital" which a hard and continuous superintendence involves. As we have said, we discard as not worth discussing the cant that "all wealth is due to labour." Labour requires wealth and brains to provide its means of existence. The interests of both are mutual, and one cannot possibly prosper without the other benefiting. Such being the case cannot some means be devised by which both interests may become more closely interwoven? We think there can. At the present moment the great cry of the agriculturist is that every agricultural labourer should have the right to claim a certain amount of ground for his own cultivation. Some of the more democratic would enforce by State enactments such partition of land; and, extending the basis of operation, would contend that every person employed in a manufacturing, or mercantile, or trading concern should have the right to invest a certain portion of his savings in the capital of that concern, and to receive his proper dividend on that investment. But we have yet to learn by what right the State should interfere between capital and labour. But even if the right were given the compulsory interference would be inimical to the welfare of both. What cannot, or should not, be enforced by Parliamentary enactment wears a very different complexion when mutually adopted. The Limited Liability Act was a great and bold step in this direction. Until the passing of this Act

little or nothing had been done by the Legislature towards facilitating the participation of the operative class in the result of their labours. But difficulties in the practical application of this Act became apparent, and it has been left to the Messrs. TANGY & CO. to develop, after much painstaking labour and anxious consideration, a plan which while providing, on the one hand, a fair and reasonable participation by the employees in the profits of the year's working, avoids the difficulties and dangers which would arise under the Limited Liability Act. The scheme initiated by this firm is the granting of a certificate of indebtedness, or bond, setting forth that the bearer is entitled to interest upon it at the same rate as the dividend declared by the company upon its ordinary shares, and in case the bearer dies before the end of the year for which the bond is good his family is entitled to the value of the bond—50%. This bond states on its face that it is of value only to the person whose name it bears, and is unalienable, and ceases to be of value when the holder leaves the service of the company. Here, then, is a practical solution, in our opinion, of the long-vexed question between capital and labour. Both interests become at once mutual—every shareholder then participates in the advantages and responsibilities of his position. The working man feeling and knowing that the greater the success and prosperity of the work the greater is his individual share of the profits will work far more contentedly and industriously. Idleness, waste, and improvidence of every kind would be discountenanced, and the best return upon capital and labour the one great object in view. This plan, too, would give stability to employment not now generally possessed, and would yield industrial fruits the benefits of which we can now form but imperfect conception. To the Messrs. TANGY & CO., therefore, belong the credit of having practically bridged the difficulty and solved the long-vexed question between capital and labour. We should certainly be glad to see the principle inaugurated by this eminent firm put to far greater test by our great manufacturing and commercial interests, satisfied that the best results would follow.

SCOTCH PIG-IRON WARRANT MARKET.

Mr. W. WILSON (Glasgow, Sept. 11) writes:—The warrant market showed some improvement in the course of last week, but sellers latterly prevailed, and the price again gave way. The long continued depression of the trade, and unremunerative prices have made the discontinuance of production at certain works almost imperative. Such, at least, has been the talk of the past week, although it is not expected that anything of this kind will happen just immediately. Shipments are fair for the week, but still compare unfavourably. A furnace has been lighted at Carnbroe, making the number blowing 95: 880 tons were taken out of store here last week, while 166 tons were taken out at Middlesbrough.

Thursday, Sept. 4.	Friday, Sept. 5.	Monday, Sept. 8.
41/7, 41/8, 41/9, 41/10	41/8, 41/9, 41/10, 41/11	41/9, 41/10, 41/11, 41/12
Tuesday, Sept. 3.	Wednesday, Sept. 10.	Thursday, Sept. 11.
41/5, 41/6	41/6, 41/7, 41/8, 41/9	41/7, 41/8, 41/9, 41/10
1884.	1883.	1882.
Price of Scotch Warrants, Sept. 3 ...	41/5, 41/6, 41/7, 41/8	41/4, 41/5, 41/6, 41/7
Furnaces in blast in Scotland do. ...	55,012	58,927
Iron in store at this date ...	11,588	12,394
Shipments of Scotch pig-iron for 1 week ending Sept. 3 ...	386,376	455,752
Do, since beginning of year ...	36/3	39/
Price of Middlesbrough No. 3, Sept. 8 ...	98	117
Furnaces in blast Middlesbrough dist. Middlesbrough Iron Imported at Grangemouth, week ending Sept. 5 ...	5,313	6,140
Do, since beginning of year ...	177,788	184,485

PALMER'S SHIPBUILDING AND IRON COMPANY.

This company has just issued their report and balance-sheet for the 12 months ended June 30. The subjoined table, prepared by Mr. S. N. CHALLONER, of Grey-street, Newcastle-on-Tyne, shows the progress of the company during the past ten years:—

	Net profits for the year ending June 30.	Dividends per cent. annum.	Reserve fund.	Written off for depreciation and extensions.	
1875	£14,054	nil	nil	£10,000	£4,948
1876	loss 35,485	nil	nil	nil	30,537
1877	23,550	nil	nil	nil	6,986
1878	53,675	3	nil	5,000	10,162
1879	44,108	3	£20,000	6,200	1,935
1880	56,565	4	32,000	9,000	566
1881	87,288	6	50,000	15,000	801
1882	79,344	8	60,000	15,000	1,093
1883	198,770	6	120,000	60,933	2,356
1884	126,938	6	150,000	25,000	5,244

The present management commenced from 1876, the progress made since that time shows that the company should always be able to have earned a dividend.

QUICKSILVER.

In San Francisco the spot price is \$30 per flask. Exports for the past week To San Blas per San Jose, Aug. 15:—

	Flasks.	Value.
Thos. Bell and Co.	150	\$ 4,500
To Corinto—Hellman Bros. & Co. ...	4	115
Total	154	\$ 4,615
Previous since Jan. 1	10,942	312,725

Total since Jan. 1, 1884... 11,096 \$317,340
Same time in 1883 20,628 560,883
Receipts from Aug. 9 to Aug. 16, 602 flasks; total Aug. 1 to Aug. 16, 1187; in July, 2611; in June, 1780; in May, 2017; in April, 3501; in March, 3210; in February, 1995; in January, 1901: total since Jan. 1, 18,665 flasks. Exports by rail in May, 340 flasks: total since Jan. 1, 811 flasks.
— San Francisco Commercial Herald and Market Review, Aug. 21.

MAXIM-WESTON ELECTRIC LIGHT.—The managers of Covent Garden Theatre, being impressed with the many advantages of electric illumination, have again decided to adopt it during this season's promenade concerts, and have entrusted the installation to the Maxim-Weston Company, the work being carried out on their behalf in a thoroughly efficient manner under the personal superintendence of Mr. Hugh Watt, the managing director of the company. The systems of this company are complete in themselves—that is to say, they comprise special generators and arc and incandescent lamps, and all requisite appliances, which have now been in use for about five years, and given every satisfaction. In the installation now under notice the generating plant is situated on the ground floor just outside the Floral Hall, and comprises three Maxim and three Weston generators. The current from the three generators could supply 600 Maxim incandescent lamps, those in use being arranged in the auditorium and over the stage. The Weston machines could supply current to 42 Weston arc lamps; the lamps each give out a light equal to 1500 candles, actual. The positions of the lamps have been carefully selected, and give a very fine effect, more especially in the auditorium and over the stage, while the Floral Hall is entirely lighted by arc lamps. The Maxim generator in outward appearance resembles the Siemens; it differs, however, entirely from that machine in the construction of its armature, and the method of coupling up the coil differs from that employed in the Gramme. We could not help admiring the even and smooth working of these machines, the sparking at the commutators being reduced to a minimum—in fact, scarcely perceptible. The principal feature of the new Maxim incandescent lamp lies in the preparation of its filament by a new process patented, for which the company claim 20 per cent. more light for the same power than any other known lamp. The perfect steadiness and purity of the lights and even brilliancy of the filament can be but in no small degree to the success of this large installation. The Weston arc lamp has long been known as remarkably steady in its action, and the simplicity of its construction renders it especially suitable for out-door illumination. All readers of the *Mining Journal*

It may not be aware that Covent Garden is one of the largest markets in Europe, the cables employed in this contract amounting to several miles in length, and we may add that the whole plant has now been in operation for several weeks without the slightest hitch of any kind. We can, therefore, congratulate the company on this important addition to their long list of successful installations.

PROGRESS OF COMMERCE.

The Trade Returns for August issued this week were most unavourable, showing a falling off all round; but as the decrease in our home exports was far outbalanced by the reduction in the imports, the position is not so bad as it otherwise would have been, while so far as regards the decrease in the arrivals of breadstuffs, it is, perhaps, the most important and encouraging point shown in the current returns. British and Irish exports aggregate for the month 19,802,000Z, or about 7 per cent. less than for the corresponding period of last year, while the imports of 29,610,000Z. exhibit a reduction of 18½ per cent., and the reshipments of colonial and foreign produce 4½ per cent., with a total of 4,047,000Z. For the eight months the exports have declined about 1½ per cent., and the imports 8½ per cent.

With regard to the exports there is nothing particularly favourable to note, but the shipment of horses and other animals has increased, and there has been great activity in telegraphic wire, &c., an export of over 400,000Z. worth having been made, partly to China, many movements shown in the returns being traceable to the influence of the war there. The heaviest decrease is apparent in yarns and textile goods, chiefly cotton, the total decrease being fully 750,000Z. The shipments of coal have fallen off 5½ and 6½ per cent. respectively in quantity and value, and iron and steel, which exhibit a diminution in every branch, 25 per cent. in both respects. Machinery and chemicals have been shipped less freely, but for the eight months are the only items which, together with raw materials, stand at any increase worth mention.

Of imports those of all corn and raw materials show the chief reduction. The arrivals of the former have been reduced, except in regard to barley, which shows an increase of 86 per cent. in quantity, and 82 per cent. in value. Wheat has fallen off 14 and 13 per cent. respectively in quantity and value, and for the 12 months since last harvest the receipts have been 11,803,000 qrs., against 15,488,000 qrs. for 1882-3, and 14,272,000 qrs. for 1881-2. The arrivals of meal and flour, however, have declined. In raw materials the decrease has been principally in wool, raw cotton, and jute. Articles subject to duty show an increase, except as regards tea and coffee. Sugar has fallen off 25 per cent. in value, notwithstanding a largely augmented arrival. The only exception to the general decline in the reshipments is in wool, which exhibits a considerable increase.

As regards the metal interests, the result for the month is through out very unfavourable, for values have decreased in greater ratio than quantities, and the only satisfaction is to be found in the fact that the same feature characterises the imports as well as the exports. As respects the former, copper ore has arrived less freely by 20 per cent.; but the value has only decreased 16 per cent., while regulas, although maintained in quantity, fell off 22 per cent. in value. Tin, however, while 46 per cent. smaller in quantity, was 50 per cent. worse in value. The receipts of lead were about the same as last year; but the value, nevertheless, was 15 per cent. lower. The reshipments of tin improved, but with a decline in value, while those of copper decreased in both quantity and value. Among the exports of metals there was an augmentation of 15½ per cent. in the shipments of copper, with a fractional improvement in value. Of tin, the export was 25 per cent. less, and the value 32½ per cent. less, and that of lead, despite a slight increase, represented a diminished value.

CHARTERED ACCOUNTANTS, AND THEIR VICTIMS.

THE VICTORIA GOLD MINING COMPANY OF VENEZUELA.

The irreparable injury inflicted upon businesses, especially when in the hands of other than an individual proprietor, by the ignorant, though systematic, interference of chartered accountants has more than once been referred to in the *Mining Journal*, and if any further evidence of the truthfulness of the assertion were required it is abundantly supplied in the vast improvement, whether regarded from the bankrupts' or from the creditors' point of view, which has been effected by the introduction of Mr. Chamberlain's Bankruptcy Act. Estates which were nursed and manipulated for seven years—in fact, until there were no more assets to appropriate as fees—by the private chartered accountant are now wound up, and the dividends distributed to the creditors in about as many weeks, whilst the expenses chargeable upon the assets by the officials of the Court only amount to a few pounds, and are proportionately small as the estate to be realised is extensive. The Bankruptcy official, unlike the merely professional trustee, has nothing to gain by prolonging the process of liquidation, and being under the direct control of the Court is equally anxious to give satisfaction to all concerned. The absconding of the Waddells, and some others of the same class, and contraction of several other respectable (?) City firms, who lived on the unfortunate to an extent which has caused them to remove from the luxurious and expensive to mean and unassuming offices was the direct result of compelling them to give something like a reasonable account of the moneys which came within their control, and if the present Government had given us nothing but the new Bankruptcy Act they would certainly be entitled to the thanks and confidence of the entire community.

But if the interference of the chartered accountant be objectionable when his sole crime is, that he is, as of necessity he must be, ignorant of the internal details of the business with which he meddles and muddles, how really culpable he is when he descends still further from the standard which is supposed to be adopted by the profession to make damaging insinuations against a company about which he knows nothing beyond what can be learned from a glance at the printed balance-sheet. The company which is made the victim in the present case is the Victoria Gold Mining Company of Venezuela, about which we will say nothing favourable or unfavourable, because, having no better premises than the chartered accountant for arriving at a conclusion, it would be unfair to do so. This chartered accountant—we will call him Mr. Zero—who attempts to stab in the dark, is wise enough to conceal his name, perhaps from prudential motives; and he is compelled to admit, by which means he avoids an action for libel, that the company's accounts are correct in matter of form, though had they adopted Mr. Zero's peculiar eccentricities they might have been prepared differently. It must be recollected, however, that Zero's eccentric balance-sheet does not correspond with the form absolutely ordered to be followed by the Act of Parliament, and that it is in the highest degree unsystematic, even as an analysis—it is, indeed, fortunate for him that he did not put his name to his unique production, or he might indeed have been a zero in the eyes of those who, not having yet been injured by his venom, give him employment.

Whether any company ought to be permitted to allot shares and commence business until three-fourths of its capital is subscribed is open to question, and the *Mining Journal* has always urged the negative in the interest of legitimate mining; but the proposed restriction, although it has been before Parliament, has not yet been enacted, and, in truth, the practice of allotment at the discretion of the directors is almost universal. As between the company so allotting and its creditors the principle is doubtless objectionable, but as between the shareholders themselves it is another question—sometimes it is to their advantage, sometimes to their disadvantage. In the case of a rich mine it is obvious that partial allotment and partial development might enable the early shareholders to acquire a larger interest, and thus secure greater profit to compensate for their early risk; but this need not at present be discussed. Taking Mr. Zero's figures, and using them in conjunction with the fact that the nominal capital is 200,000Z., the company's resources at the present time are about 99,258Z. 10s.—that is to say, its liabilities are 1846Z. 8s. 11d., and to meet this it has authorised but unrealised capital, 100,761Z. 10s., and what Mr. Zero calls available assets (cash at bank and debtors),

343Z. 8s. 10d., together with calls unpaid, 4457Z. 10s.—105,562Z. 8s. 10d. Of course, this would be applicable to pay any balance of purchase-money that may be due and to provide working capital; so that the concern is not in a worse position than many others which have surmounted their difficulties and become prosperous.

That sanguine statements are made in prospectuses is well-known; indeed, if it were not for the anticipation of those enormous profits which have made mining celebrated as an investment, no one would embark in it, and where the mines are fairly and judiciously worked, the greatest disappointment is usually in the matter of time—few realising that rock cannot be cut up like cheese, and that in mining, as in other businesses, profits cannot be earned without work and capital. In the case of the Victoria Gold Mining Company of Venezuela less than 20,000Z. in all has been expended for raising the capital, plant, and development, the latter term obviously meaning dead-work, salaries and wages, and expenditure at the mine, and two years' management and London expenses. Whether the directors might have done better with the funds from time to time at their command cannot now be demonstrated; but enough has been said to show that Mr. Zero has wilfully and venomously misrepresented the company's present resources, and done his utmost to injure an enterprise which is certainly no less promising than when the present shareholders subscribed, and which may yet satisfy all concerned. There is a certain kind of algebraical problem, in solving which the same quotient is obtained, even if the dividend and divisor be interchanged; but in that case the result is always accurate and reliable, whilst Mr. Zero has been careful to arrange his figures, so that whilst apparently accurate, they are unreliable and intentionally misleading.

MINING IN DERBYSHIRE UNDER THE DERBYSHIRE MINING CUSTOMS AND MINERAL COURTS ACT OF 1852.

No. V.—By W. NINESSE, M.E.

That portion of the Hundred of the High Peak called the King's Field, otherwise the King's Fee, is supposed to have been the property of the Crown from the Norman Conquest, as it was about that time and for long afterwards in the same custody with the castle (from which Castleton takes its name), and the Domesday Book mentions three mines at Wirksworth, and one in each of the manors of Crich, Ashford, Bakewell, and Mesterford. The King's Mine at Wirksworth was granted to Robert del Don by Edward I., that of Crich, which had been granted by King John to Hubert Fitz Ralph, was confirmed by Edward II. to Roger de Belers in 1325.

As it is indisputable that from time immemorial miners have claimed and exercised the right to mine within the King's Field, subject to certain ancient customs, and upon paying certain duties to the Crown, and there is nothing extant to prove the origin of these customs, though attempts have often been made to do so, it is reasonable to suppose that the miners originally had the sole claim to the mines, as being the earliest workers in the land when the King's Field was in a wild and uncultivated state, and as the land became enclosed and cultivated, and the farmers numerous, the more difficult it became for the miners, until within half a century or so, to maintain doubtless only their just and equitable rights.

I shall now deal with the first division of the Act, which as termed therein is a schedule of articles and customs by this Act established. The first clause of the Act, after giving the short title of the Act, states "that the schedules to this Act shall be considered part thereof."

Article 1.—It is lawful for all the subjects of this realm to search for, sink, and dig mines or veins of lead ore upon, in, or under all manner of lands, of whose inheritance soever they may be (churches, churches, places for public worship, burial grounds, dwelling-houses, orchards, gardens, pleasure-grounds, and highways excepted), but if no vein of ore be found, or if the founder's mere be not freed as provided by the 11th article, and the person making search abandon it for fourteen days, the land must be levelled and made good by the person making the search within the space of twelve clear days after the expiration of the said fourteen days, or the owner of such land may level and make good the same, and recover the expenses thereof from the miner in an action of debt in the small debt barmote court or in the county court: Provided always that nothing herein contained shall prevent or hinder the miner from following and working his vein, and searching for and getting lead ore under such excepted places as aforesaid at a lower depth than 15 yards from the surface; but in case by so doing he shall damage or injure any such excepted places, or the surface thereof, the owner or reputed owner or occupier may recover from such miner compensation for such damage or injury, by action in the county court if the damage shall not exceed 50Z., or otherwise by action in the superior courts; but in case the owner or reputed owner or occupier of such excepted places as aforesaid apprehends that such working is carried on at a less depth than 15 yards from the surface, or will endanger the security of such excepted places, the steward and grand jury shall have power to suspend the workings of such veins, or to direct the working thereof, so as to prevent such damage."

As regards those persons to whom the Act applies, there is nothing selfish in this article, as it makes it lawful for not only persons in the county of Derbyshire, but "all the subjects of this realm to mine in or under all manner of lands of whose inheritance they may be." This custom is the most ancient of the Derbyshire mining customs and unique, inasmuch as there is nothing like it extant in connection with mining in any other county, giving as it does the same amount of power to whom it applies. Neither the Forest of Dean Act (1 and 2 Vict. c. 43) or the Stannary Acts, which are very numerous, do not give anything like the power this Act does to the miners over the landowners, or the same advantages in other ways.

As a rule, it is the miners' own fault if when searching for a vein "no vein of ore be found," as the course of the veins in this district are very regular, and there is little difficulty in finding them. Formerly the miners were not required to level and make good land in case of abandonment. "The Compleat Mineral Laws of Derbyshire," written in 1734, states that if land was not wrought according to the custom of the mine the owner of the same may fill it again at his will and pleasure. Hardy, who wrote a few years later (1748), confirms this custom. Miners were supposed to fence their workings to protect cattle from injury, but this in any case they would now be compelled to do, by the ruling of the Metalliferous Mines Act. This article in itself, unless the whole of the land within the jurisdiction of the Act was owned by the miner, could not give him more power, for although under certain restrictions it excepts such places as churches, churchyards, gardens, &c., from being mined in or upon, it gives the miner power to mine even under these places at a depth of 15 yards, which is deep enough for all practical purposes. Nor can anyone make a garden or plant trees to evade the operation of the article, as in the case of Gilbert v. Tomison, 4 D. and R. 222, which was trespass for breaking and entering a close of the plaintiff called a garden, to which the defendant pleaded the immemorial custom to search for minerals within which the locus in quo was situate (gardens excepted). It being proved that the locus in quo had been planted with shrubs within the last six years, and with potatoes just before the trespass. The Court of Queen's Bench held it to be a garden within the meaning of the exception, notwithstanding it was urged upon the courts that the evidence was too slight to bring the locus in quo within the exception of the custom, which should be limited by ancient gardens only, and not circumscribed by such as were obviously made in modern times for the purpose of evading the operation of a custom in which the public is concerned. Not even in any other country than Great Britain has the miner such power given him as does this article, for without preliminaries of any kind he can at once commence mining operations in whatever place he may select within its ruling. The too often great delay in drawing up leases, and the fearful cost of doing so, under this Act is dispensed with, as no lease is required, simply an entry in the barmaster's book. The landowner under the ruling of the Act can claim no land damage, and if the dues termed in the Act lot was paid on profits the miner in Derbyshire would have nothing whatever to complain of, and would in fact stand in a better position to make the most of his article than those of any other country.

In one section of the county, owned by one of the most liberal of England's noblemen, His Grace the Duke of Rutland, K.G., represented by Mr. R. W. M. Nesfield, J.P., Bakewell, the miners asked to have the dues lowered, and his grace at once, through Mr. Nesfield, more than complied with their request by giving them the whole of the dues. Such a noble act as this ought not to pass unnoticed, which with many others of a similar nature have endeared his grace to the miners of the county, and with whom his name will ever be a household word.

The Derbyshire miners stand in an enviable position, which is due only to their own exertions, otherwise they would be going through the same grinding process as many of their brothers in different parts of the county, as before the Act became law they had uphill work to maintain their rights and privileges, but they did so in spite of the tremendous opposition they had to contend with, and it is much to be regretted that the low price of lead prevents them to a much greater extent than they do at present from the enjoyment of the unexceptionable facilities they certainly possess. There used to exist an old custom in Wirksworth to dig lead in another's soil as far as the miner could throw his mattock.

RYLAND'S DIRECTORY.

Although a purchaser may be fairly well satisfied with the iron or steel he is in the habit of using, competition is now so active, and the science of metallurgy has been so developed that metal especially adapted to each particular purpose is so readily produced that it is essential that the consumer and producer should be brought into the closest communication with each other—indeed, there are many who attribute the present trade depression to the prejudicial influence of agents and middlemen—and there is probably no other volume which, so far as the iron and steel trades are concerned, facilitates this as Ryland's Iron, Steel, and Allied Trades Directory (published by the proprietors at Union-passage, Birmingham), the new edition of which, with engravings of brands and trade marks, has just been issued.

The iron, steel, and tin-plate section has been greatly improved by stating the sizes of iron or steel rolled, and giving a new and enlarged classification of the different kinds of pig and manufactured iron and steel, and a corrected list of brands and trade marks. The rest of this section is carefully corrected, and with the insertion of all the new works started since 1881, it will be found a true guide by which every active iron, steel, and tin-plate works of the United Kingdom can be communicated with, either by post, telegraph, or rail, and in it found the brands and trade marks, descriptions and quantities, plant and capacity, managers and agents, of the iron, steel, and tin-plate trades.

The allied trades section has been compiled with the same care as the first part, and is, it is believed, the first directory published of bona fide manufacturers. The two parts combined now contain the names of all the actual makers of iron and steel, and the names also of the buyers of iron and steel, which the term allied trades includes; added to this the editors have given another section comprising the iron, steel, and tin-plate merchants, and recognised agents. They have been engaged on this for a long time, and experienced agents have visited almost every district before our actual canvassing took place. They have used more than the ordinary means of ascertaining that the names they give are actually what they are represented to be. Where necessary, and this is especially so in South Staffordshire and East Worcestershire, they have not only given the postal address of the towns, but also the nearest railway station and the tram route; the value of this information will be seen further when it is stated that in only a very few cases does the postal address indicate the situation of a town sufficient to be of any use to a traveller. For instance, Sedgley is in Staffordshire, the postal address being "near Dudley, Worcestershire." The postal address "West Bromwich" would be quite misleading to a traveller, as the principal works in this district lie round Albion, Swan Village, and Great Bridge stations. This is the case throughout the whole of South Staffordshire and East Worcestershire.

From the manner in which the information has been collected no doubt need be entertained as to its reliability, whilst the various arrangements—according to trades, to districts, and to brands—which are embraced in the Directory adapts it to the requirements of all classes, and permits of its application to numerous separate purposes; it is altogether an invaluable commercial compendium, and will be widely appreciated.

HOT BLAST, AND ECONOMY IN THE BLAST-FURNACE.

At a meeting of the South Staffordshire Institute of Iron and Steelworks Managers, at Dudley, on Monday, Mr. A. E. COWPER, of Middlesbrough, read a paper on this subject. The wide adoption of the system in the North of England had led the Staffordshire furnace proprietors to enquire more closely into its suitability for South Staffordshire, where at present only a few establishments have adopted it, amongst others the Spring Vale Furnaces of Mr. Alfred Hickman, where the pigs are obtained for the New Staffordshire Steel and Ingot Company's Works.

In the discussion which followed the reading of the paper, the general opinion was in favour of the stoves. The CHAIRMAN, Mr. Hudson (President of the Institute) said they had two furnaces—one with the temperature at 900°, and the other at 1500°—and they found the difference in favour of the hot-blast stove to be from 3½ to 4 cwt. of coke to 1 ton of iron. Moreover, the coal and slack, which amounted to 6d. or 9d. per ton of iron produced by the iron pipe stove was entirely saved, since no coal or slack was needed in the hot-blast stove. The only repairs necessary during eight years of use had been one change of the gas valves and an occasional change of the hot-blast valves. In reply to Mr. SPURGEON as to what was the smallest height and diameter which would admit of an efficient working of these stoves, Mr. COWPER stated that he had stoves at work in Switzerland where the dimensions were only 15 ft. diameter and 28 ft. high. The cost of erecting a pair of stoves suitable for a furnace of 20 ft. diameter and 54 ft. high would be about 2000Z., and the royalty was 300Z.

The CHAIRMAN said that with a pair of stoves designed to work one furnace and to make 350 tons of iron, they had blown two furnaces and made over 500 tons. They had made from one furnace as much as 300 tons of Staffordshire mine iron with a consumption of between 17 and 18 cwt. of soft coke per ton of iron; and this with a furnace only 50 ft. high. In answer to further questions, Mr. Cowper showed a simple apparatus, consisting of a small gun and a knife-jointed rod for efficiently cleaning the stoves. The bricks never melted or cracked, or got spoiled in any way. He had bricks which had been at work seven or eight years, but which were as yet quite sharp. If the ironmasters of Staffordshire would go into Yorkshire, and see the hundreds that were there in operation they would have many erroneous opinions about the stove corrected. It was not absolutely indispensable to have a close-topped furnace. With a chimney tall enough it could be worked with the open-topped furnace.

Mr. WALKER was afraid the Cowper stove would not work well in Staffordshire, because the Staffordshire coke was so soft and friable. In some cases of high furnaces the soft coke bottoms would not bear their burdens, but got crushed, and ran like sand, even whilst working without the hot blast. Now, when the hot blast was put in from the Cowper stove there was no necessity for so much coke, and consequently the coke bottom was reduced in thickness. Still less, therefore, would it now bear its burden when the Cowper stove was used.

Several members thought the difficulty theoretical only, and the CHAIRMAN quoted instances in which the stove had been used with success with tolerably high furnaces and soft coke.

The Institute passed a hearty vote of thanks to Mr. Cowper. It was intimated that his paper, and the discussion which followed would be printed for circulation by the Institute, and that the policy of securing addresses by men of Mr. Cowper's status in metallurgical circles would be continued.

INTERNATIONAL INVENTIONS EXHIBITION.—The latest date for sending in applications for space has been extended from Oct. 1 to Nov. 1.

Registration of New Companies.

The following joint-stock companies have been duly registered:—

THE ARGENTINE STEAM LIGHTER COMPANY (Limited).—Capital 50,000*l.*, in shares of 10*l.*. To carry on in that portion of South America the business of ship, barge, and lighter owners, &c. The subscribers (who take one share each) are—G. Mott, Liverpool; W. Holland, Liverpool; C. W. Jones, Liverpool; E. B. Dunning, Liverpool; H. Stokes, Liverpool; A. Cook, Liverpool; G. H. Melly, Liverpool.

THE LINTHURST AND BART GREEN BRICK, QUARRY, AND TILE MANUFACTURING COMPANY (Limited).—Capital 20,000*l.*, in shares of 10*l.*. To acquire a property situated at Lintthurst, comprising 11 acres, and to carry on the business of brick and tile makers, quarrymen, &c. The subscribers are—J. Tilt, Bromsgrove, 150; B. H. Lauder, Bromsgrove, 110; W. Corbett, Bromsgrove, 110; H. Wheelock, Bromsgrove, 100; J. Lea, Bromsgrove, 60; H. S. Whitfield, Bromsgrove, 60; H. Barrett, Bromsgrove, 50; P. Levens, Bromsgrove, 50.

THE BURNHOPE LEAD MINING COMPANY (Limited).—Capital 10,000*l.*, in shares of 1*l.*. The searching for, winning, and working of lead ore and other minerals, in ground situated at Edmundbyers, county of Durham, the leasing and otherwise acquiring the ores and minerals, and generally to carry on all operations connected with a lead mining and smelting company. The subscribers (who take one share each) are—J. Leybourne, Shotley Bridge, mineowner; W. Featherstonhaugh, Blackhill, Rev.; J. Leybourne, Sunderland, cashier; L. Leybourne, Blackhill, clerk; J. F. Bell, Langley Park, corn merchant; W. Logan, Langley Park, M.E.; R. Murray, Blackhill, gentleman. The following make up the first board of directors—Messrs. S. and J. Leybourne, Featherstonhaugh, Bell, and Logan. The number must not be less than five or exceed seven. The qualification being fixed at 50 shares.

THE BARROW BRIDGE COTTON SPINNING COMPANY (Limited).—Capital 80,000*l.*, in shares of 10*l.*. The general business of spinners and manufacturers of cotton, doublers, &c. The subscribers (who take one share each) are—J. Butterworth, Rochdale; W. H. Horsfall, Sale; C. W. Ireland, Sale; R. Lennox, Halliwell; F. McCormack, Bolton; J. Vase, Halliwell; H. Haselden, Sharples.

THE INTERNATIONAL INDUSTRIAL AND IMPROVEMENTS COMPANY (Limited).—Capital 600,000*l.*, in shares of 10*l.*. To acquire, buy, use, vend, and deal in patents, concessions, &c. The subscribers (who take one share each) are—A. M. Ullman, Paris; H. Sinnett, 3, Great Queen-street; J. Oppenheim, 216, Piccadilly; E. H. Wilson, 31, Lombard-street; A. T. Smith, Ilford; R. Attenborough, 3, Great Queen-street; J. B. Apack, Paris.

CAVARGNA'S PATENT HEATING APPARATUS AND SMOKELESS FUEL COMPANY (Limited).—Capital 20,000*l.*, in shares of 5*l.*. To manufacture, sell, and deal in artificial fuel in connection with certain patents. The subscribers are—W. Butterworth, Manchester, 20; J. Hope, Manchester, 10; J. Witty, Manchester, 10; P. Gregson, Manchester, 1; W. Foote, Manchester, 1; J. Cavargna, Manchester, 1; C. E. R. Gerdler, Manchester, 1.

THE MAGDEBURGH TRAMWAYS COMPANY (Limited).—Capital 120,000*l.*, in shares of 10*l.*. To lay down, construct, equip, maintain, and work a system of tramways in said city or elsewhere. The subscribers (who take one share each) are—E. Greenway, Colleshill; J. Fell, Leamington; G. Greenway, Leamington; E. Neave, Dresden; E. Pritchard, Birmingham; B. Campbell, Warwick; E. H. Carter, Birmingham.

THE WINDSOR INVESTMENT COMPANY (Limited).—Capital 20,000*l.*, in shares of 10*l.*. To acquire a property in South Wales, and to carry on the usual business of a land investment company. The subscribers are—R. W. A. Southern, Cardiff, 5; B. W. King, Cardiff, 5; S. Horn, Cardiff, 5; S. Fletcher, Cardiff, 5; D. Duncan, Cardiff, 10; J. T. Edwards, Cardiff, 2; H. A. Hughes, Maidstone, 1.

THE BRITISH AND FOREIGN MUNICIPAL TRUST (Limited).—Capital 5000*l.*, in shares of 5*l.*. To make advances on various kinds of securities, and to carry on generally a financial business. The subscribers (who take one share each) are—T. R. Dore, Shepherd's Bush; F. Allnutt, 28, Paternoster-row; A. V. Kyrke, Croydon; H. S. Hawkesworth, 70, Stoke Newington-road; G. M. Shallard, Greenwich; S. D. Shallard, Greenwich; C. E. Doyle, 12, Newgate-street.

JOHN FIECHTER, SONS, AND COMPANY (Limited).—Capital 100,000*l.*, in shares of 5*l.*. To purchase, take over, and carry on a business of millwrights, engineers, and iron and brass founders, established in Liverpool and Warrington. The subscribers (who take one share each) are—S. Jones, Warrington; J. T. Barker, Anfield; E. Fiechter, Liverpool; J. J. Harley, Liverpool; H. Bartlett, Liverpool; E. Berry, Liverpool; J. H. Wharton, Liverpool.

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THE MINING AND GEOLOGICAL FEATURES OF THE BLACK COUNTRY.

In his paper read before the joint meeting of the Chesterfield and Derbyshire Institute of Mining, Civil, and Mechanical Engineers, and the South Staffordshire and East Worcestershire Institute of Mining Engineers, Mr. HENRY JOHNSON, Jun., of Dudley, said that it was well known that South Staffordshire was one of the oldest of the great mineral-producing districts of Great Britain. It was in the immediate neighbourhood of Dudley that Dud Dudley, in 1619, first demonstrated the practicability of smelting clay ironstone with coal in lieu of charcoal. The following extract from Plot's History of Staffordshire, published in 1686, served to show the state of the South Staffordshire coal field at that time. Speaking of the common coal then raised at Wednesbury, Dudley, and Sedgley, Dr. Plot said:—"Of which sort there is so great plenty in all parts of the country (especially about the three above-mentioned places) that most commonly there are 12 or 14 collieries in work, and twice as many out of work within 10 miles round, some of which afford 2000 tons of coal yearly, others 3000, 4000, or 5000 tons. The upper or topmost beds above the ironstone lying sometimes 10, 11, or 12 yards thick . . . nor indeed could the country well subsist without such vast supplies, the wood being most of it spent upon the ironworks." In its virgin state the South Staffordshire coal field was remarkably rich both in coal, ironstone, and limestone, and as owing to the geological structure of the country the principal seams of each cropped out in various places, the mineral riches of the district could not well escape attention. In point of concentration of wealth, no part of Great Britain had presented more striking characteristics than South Staffordshire. Within a comparatively short distance from the surface a great number of rich seams of coal and ironstone existed, and in several instances the ironstone was so closely associated with the coals that both were worked by one operation. The most valuable seam was the famous Thick or 10 yard coal, which represented a deposit of pure carbonaceous matter not found in a single stratum in any other coal field of Great Britain. That enormous bed of coal might be said to consist of numerous minor beds, in some cases with very little foreign matter intervening, but in the south end of the coal field much clayey deposit separated the layers of coal comprising the Thick coal. Notwithstanding, however, the extent of the minerals originally existing in that coal field, the requirements of the local iron manufacture and of the many other manufactures that had sprung up in the neighbourhood, together with the demand for domestic consumption, had led to a large continuous extraction of coal; and it was generally admitted that the older portion at least of the "Black Country" was nearly worked out and exhausted.

Under these circumstances it had become a matter of vital importance to South Staffordshire to ascertain what prospects there were of following the coal measures underneath the red rocks which surrounded the coal field. The credit for the first successful attempt to settle that important question was due to the Sandwell Park Colliery Company, whose operations had been entirely carried out from the commencement in 1870 until within a few months ago by his (Mr. Johnson's) father and himself as pioneers and engineers. The position of the trial shaft was about 1½ mile east of the eastern boundary fault, or about 1 mile beyond the previous known boundary of the coal field. The section of the colliery was—Permian, 200 yards; upper coal measures, 100 yards; lower coal measures, 118 yards; Thick coal, 9 yards. Depth below sea level about 830 ft. The maximum quantity of water met with in sinking was about 750 gals. per minute, but now only about 40 gals. The 150*l.* shares of the company were sold for 500*l.* when the Brooch coal was struck, and for as much as 1135*l.* when Thick coal was struck. After giving particulars as to the plant and the works constructed since the coal was won, the writer said that benefiting by the discovery of coal at Sandwell the Perry and the Hamstead sinkings were commenced about 2½ miles to the north-east, and considerably in the deep of Sandwell, the former being more than 2 miles, and the latter about 1½ mile beyond the eastern boundary fault, or parent coal field, and both sinkings being confined within the exposed area of permian, as at Sandwell. The Perry sinking was conducted by Messrs. S. and J. Bailey, mining engineers, of Perry Barr, and after sinking 130 yards, and boring to a total depth of 560 yards, was abandoned and dismantled, the proof being left to the Hamstead Colliery Company to make, which they ultimately succeeded in doing, after about five years' sinking, at a depth of 615 yards. The amount expended in the Perry trial sinking was about 40,000*l.*. The failure to discover coal at the great depth bored to at Perry, and the inclination of the Thick coal as proved by the Hamstead workings, suggested the existence of a large downthrow fault between the two sinkings, and he believed it was the general opinion of those more intimately connected with the subject than himself that that was so. The Sandwell and Hamstead sinkings might be said to have proved coal about 1½ mile beyond the previously known coal field, and to have increased the area several square miles, and it might also be said that they had also, to a considerable extent, proved the continuity of the coal field underneath Birmingham right away to the Warwickshire coal field. The extraction of so thick a seam at such great depths was quite a new feature in mining, at least in this country, and must, therefore, in the absence of any previous experience, form matter of the greatest consideration and caution in working. Next proceeding to describe the drive through the "Black Country," which would be taken on the following day by the members, he said that, starting from the Hamstead Colliery, the party would pass over the conglomerate beds and permian to the Sandwell Park Colliery, which was about 210 ft. relatively higher than Hamstead. Thence they would continue over the permian and flat ground to the eastern boundary fault, which was an upthrow west of 150 yards near to the town of Oldbury, the coal measures there being exposed to the surface, and the Thick coal only about 20 yards deep, so that in ¾ miles the coal was thrown down relatively nearly 700 yards. They would proceed along the slope of the Rowley Hills to the Hailstone Basaltic Quarry and Turner's Hill, 820 ft. above sea level, from which a splendid view of the South Staffordshire and East Worcestershire coal field might be obtained. The coal field would now be included within a line drawn from Brereton, near Rugeley, to Wolverhampton, thence through Kingwinford to Stourbridge, and from that to the hills known as the Bromsgrove Lickey, and thence by Harborne and Handsworth and Great Barr, through Aldridge back again to Brereton, and it might be said to measure about 26 miles in length and about 9 miles in width, and have a mean height of about 400 or 500 ft. above the sea.

The rocks that entered into the composition of the district were both igneous and aqueous. Of the latter there were in ascending order—1. Silurian, consisting of the Wenlock and Ludlow series.—2. Coal measures proper.—3. Permian.—4. New red sandstone.—5. Drift deposits. The former comprised masses of columnar basalt, inter-bedded traps, and decomposed intrusive igneous rocks of various kinds. After inspecting the basaltic quarry the party would proceed over the summit of the hills to Dudley, passing on the way Earl of Dudley's Lye Cross Colliery and Messrs. Minton's Grace Mary Colliery. Igneous rocks were found in various parts of the coal field, but by far the most important mass formed the Rowley Hills, which measured about 2 miles long by 1 mile wide, and with the out-

crop of the Wenlock limestone at Dudley and Sedgley, formed the great anticlinal line which divided the South Staffordshire from the East Worcestershire portion of the coal field. Recent mining operations had thrown considerable light upon the relation of the large mass of Rowley basalt to the coal measures beneath. It had been clearly demonstrated that the basalt formed only a comparatively thin capping over the coal measures, which lay in regular order beneath, and were for the most part unaltered by their close contact with the igneous rock, which appeared to have been forced up through a small opening or openings, and to have spread out over what was at that period dry land, or the bottom of a shallow sea. The Thick coal was won at Messrs. Minton's at a depth of 275 yards, the sinking being nearly at the summit of the hills, and what was as remarkable as the discovery of the coal was the fact that in the sinking no basalt was met with, although it was *in situ* highly columnar within 50 yards of the shaft. It was only just to say that that spirited enterprise was due to the sound geological knowledge of the late Mr. Samuel Minton. The Earl of Dudley was raising large quantities of Thick coal from under these hills, his Lye Cross shafts having passed through about 60 or 70 ft. thick of basalt in sinking. The coal at that sinking was relatively about 1000 ft. above the Thick coal at Sandwell, and about 1800 ft. above the Thick coal as proved at Hamstead. A canal tunnel was driven through the Rowley Hills some years ago 2½ miles in length, at a cost of about 200,000*l.*, and no basalt was passed through.

Fifty years ago it was generally believed that no coal would be found under those basaltic hills, and now it was difficult to say where it did not exist. No large pipe or leader of basalt coming from below had yet been discovered in any of the workings. On arriving at Dudley the party would visit the home of the local Mining Institute, as also the Dudley and Midland Geological Society's Museum, which were under the same roof. Outcrops of the Thick and other coals occurred all round the town of Dudley, the foundation of some of the principal buildings in the heart of the town being in the coal itself. After inspecting Dudley Castle the party would drive through the grounds and along the outcrop of the Wenlock limestone, forming part of the Castle Hill, *via* Tipton, to the Thick coal open workings at the Foxyards, belonging to the Earl of Dudley. There was to be seen the most remarkable coal deposit in the kingdom—a seam from 35 to 45 ft. thick of good coal, covered only with a few feet of surface soil, and all the usual seams of coal and ironstone peculiar to that part of the coal field underlying, and, like the Thick coal, of more than the average thickness and quality. The Thick coal was within a few feet of the surface soil, while at Sandwell Colliery it was 418 yards, and at Hamstead 615 yards deep from the surface. The falls of coal in that work had sometimes amounted to the enormous quantity of from 5000 to 6000 tons at one operation, occupying weeks to load up. The whole seam was extracted at one operation, scarcely a ton being left behind. There was a peculiarity attaching to that extraordinary thickness of coal at the outcrop—its density or specific gravity was much less than at greater depths, the theory advanced for that being that it could not have been covered with any considerable thickness of strata, and, therefore, had not been subjected to any great superincumbent pressure. The appearance of that extraordinary deposit of coal at the surface was due to the upheaval of the Wenlock limestone. From the Foxyards openwork the party would continue along the line of outcrop of the Wenlock limestone of the Wren's Nest, and thence along the western outcrop to the limestone caverns at the north end of the hill. Between Dudley and Wolverhampton they had a series of eminences that were for the most part anticlinal of upper silurian strata. Dudley Castle, Wren's Nest, and Sedgley Hills were composed of the Wenlock limestones and shales. The ridge of high ground running from Dudley to Sedgley, of which the most conspicuous points were Dudley Castle Hill (730 ft.), the Wren's Nest (730 ft.), and Sedgley Beacon (760 ft.) above the sea, might be said to form part of the central watershed of England. The southern portion fell into the Bristol Channel, while the northern portion fell into the German Ocean. Passing from the outcropping Wenlock limestone on to the exposed coal measures, and again crossing the several outcropping seams of coal, the party would continue along the high ground to Upper Gornal (where the Ludlow limestones and shales were exposed) past Sedgley Beacon, and crossing the western boundary fault, and again over the permian which bordered that side of the coal field to Wolverhampton. There the party would visit the archaeological and geological sections of the Exhibition now being held in that town, containing a very large and interesting collection of local fossils and objects of interest (both ancient and modern) connected with mining in the district.

THE MINERAL VEINS OF THE LAKE DISTRICT.—No. III.

The only difficulty now to be overcome is as to how the sulphides were produced? Were they condensed from sublimed vapour, or precipitated from aqueous solutions, as it is quite clear from the nature of the veinstones that they could not have been injected as igneous fluids? When sulphides of iron, zinc, lead, and copper are heated in the presence of air, oxygen, or steam they are decomposed, therefore, if pyrite, galena, chalcocypite, and blende resulted from the condensation of vapours, it will be necessary to assume that the exact combining proportions of the sulphur and metals were present in every cavity of the cellular quartz, which is next to impossible, because the condensation would not be a simple condensation of sulphides that had just been vapourised, but the production of a definite combination from an indefinite mixture of elementary substances that in all probability had previously existed quite apart. It seems, therefore, more likely that the ores were precipitated from aqueous solutions in the way indicated below for blende, although the reaction necessary for the production of each ore might be different:

Solution.	Precipitant.	Precipitate.
Zn H ₂ SO ₄	K ₂ S or Na ₂ S	Zn SH ₂ O

At ordinary temperatures the resulting zinc sulphide would be hydrated as shown above, but it is probable that at such higher temperatures as accompanied these reactions under pressure the precipitate would be anhydrous as is known, for example, to be the case with hematite. K₂ S or Na₂ S would result from the action of sulphuric acid on the alkalis in the country rock. It is only necessary for one metallic solution to have been present in the veins at once, because it has been seen that the different ores were not all deposited together but in succession. This, also, partly explains why it is that some minerals are more abundant in veins having certain directions than in those with other courses. Take chalcocypite for example. This ore is most frequently and most abundantly found in veins having an easterly and westerly bearing. It also appears that it was the earliest of the metallic minerals to be introduced into the veins, and this may be the reason that it is so much more abundant in east and west veins than in those which may be roughly spoken of as north and south veins—for the east and west veins seem to have existed first. This may not be so in every case, but it is in a large proportion of them, and notably so at Goldscope, where the east and west copper vein has been shifted by the north and south lead veins. Facts of similar import may be observed in adjoining areas, such as the Whitehaven hematite district. There, owing to great lithological variations in the strata, the existence of faults and their relative ages are easily ascertained, and it is a well-established fact that the east and west faults are older than those which are nearly north and south.

The banded structure so common in the veins of other districts is not met with here, but the phenomena exhibited by such veins may be quite easily explained with the help of the foregoing considerations without assuming that they were preceded by fissures or that the banded appearance of their contents is due to the repeated opening of such fissures. Suppose a narrow vein of quartz had been formed in the way herein suggested, and that the pores or cells in it had been filled by some metallic mineral (any) chalcocypite. Suppose, further, that at some subsequent period the first part of this process were repeated, and that the acid solution acted on both walls of the vein already in existence. The consequence of that operation would be the formation of two additional ribs of quartz veinstone, one on each side of that containing the chalcocypite. The pores in these

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The SESSION COMMENCES on MONDAY, October 6th.

Programmes may be obtained on application at the College; or by letter addressed to the Secretary, Royal College of Science, Stephen's Green, Dublin.

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Session, 1884-85.

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The following Courses of Lectures will be given during the Session:—Physics, Professor Guthrie, F.R.S., 1st Oct., 1884; Principles of Agriculture, J. Wrightson, Esq., 1st Oct.; Elementary Biology (Animals), Professor Huxley, F.R.S., 5th Oct.; Metallurgy, Professor Chandler Roberts, F.R.S., 5th Oct.; Elementary Organic and Inorganic Chemistry, Professor E. Frankland, F.R.S., 3rd Nov.; Mining, Professor Warrington Smyth, F.R.S., 10th Nov.; Astronomical Physics, J. Norman Lockyer, Esq., F.R.S., 13th Jan., 1885; Elementary Biology (Plants), P. O. Bower, Esq., 5th Feb.; Elementary Geology, Professor Judd, F.R.S., 15th Feb.; Zoology and Palaeontology, Professor Huxley, F.R.S., 15th Feb.; Botany, F. O. Bower, Esq., 15th Feb.; Mechanics, Professor T. M. Goodve, M.A., 15th Feb.; Advanced Organic and Inorganic Chemistry, Dr. P. Jupp, F.C.S., 15th Feb.; Mineralogy, F. Rutley, Esq., 15th March.

A Course of Mine Surveying, conducted by Mr. B. H. Brough, will begin on the 15th Feb., 1885.

In addition to the above, Lectures will be given in the Physical Department by Messrs. Boys, Mitchell, Hoffer, and Capt. W. de W. Abney, F.R.S.; in the Chemical Department by Drs. Hodgkinson and Percy Frankland; in the Biological Department by Mr. G. Huxley.

For further particulars apply to the Registrar, Normal School of Science, South Kensington.

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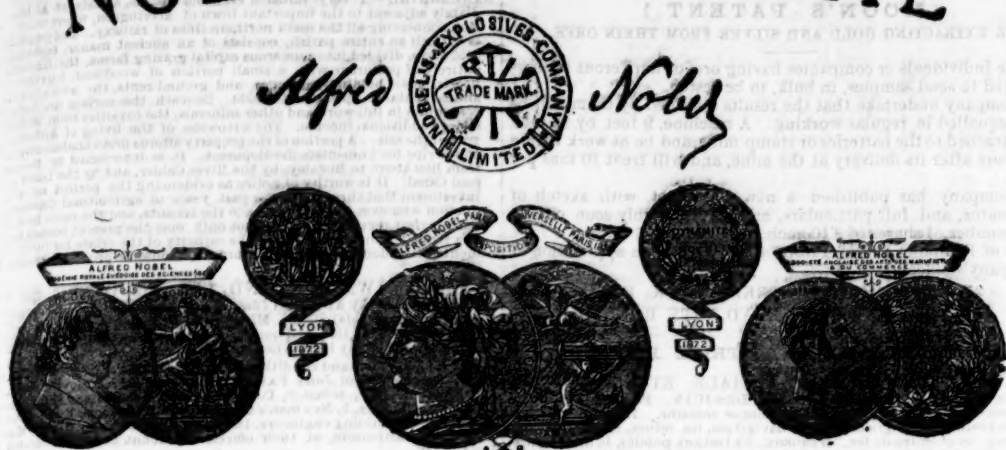
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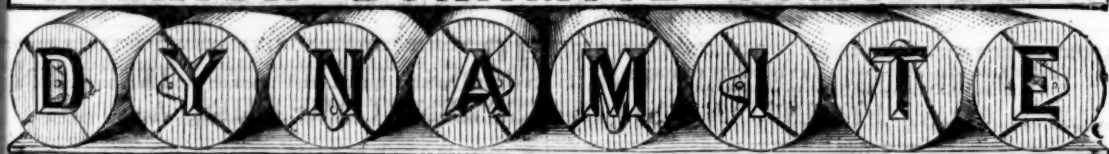
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4036	Wheel Uny, <i>f</i> , <i>c</i> , <i>Bedruth</i>	20 7 6
1866	Wye Valley, <i>f</i> , <i>Montgomery</i>	1 0 0
50000	Yeoland Consols, <i>f</i> , <i>Devonshire</i>	0 12 0
4000	Ystwith, <i>f</i> , <i>C</i> , <i>Cardigan</i>	1 0 0

bl, blende; c, copper; g, gold; l, lead; s, silver; sl, silver-lead; t, tin; z, zinc; i, iron; a, arsenic. Limited Liability Companies; † quoted on the Stock Exchange; ‡ have paid dividends.

NON-DIVIDEND FOREIGN MINES; FOREIGN AND MISCELLANEOUS STOCKS; TRAMWAYS; INSURANCE COMPANIES; GAS, IRON AND COAL, FINANCIAL AND INVESTMENT COMPANIES, &c.

GAS COMPANIES.		
Issued Shares.		Rs.
50000...	25 Bahla [L]	all
100000...	5 Bombay [L]	all
100000...	5 Ditto, New [L]	all
270000...	25 Brentford Consolidated	100
140000...	20 British Gaslight [L]	all
500000...	50 Commercial Consolidated	100
200000...	25 Continental Union [L] Orp	all
200000...	20 Do. do. New, 1855, 1872	all
100000...	20 Do. do. 7 per cent. Preference	all
234000...	10 European [L]	all
948500...	50 Gaslight and Coke, A. Ord.	all
2942000...	500 Do. 4 per cent. Deb. Stock	all
50000...	10 Hong Kong and China	all
28000000...	500 Imperial Continental	100
120000...	5 Malta & Mediterranean [L]	all
1000000...	5 Metrop. of Melbourne p.c. Deb.	all
250000...	20 Monte Video [L]	all
100000...	5 Ottoman [L]	all
300000...	5 Oriental [L]	all
875000...	20 Rio de Janeiro [L]	all
5000000...	500 South Metropolitan, A.	100
500000...	500 Ditto, ditto, B.	100
TRAMWAYS.		
Issued Shares.		Rs.
400000...	5 Anglo-Argentine [L]	all
100000...	10 Barcelona [L]	all
7140...	10 Belfast Street Tramways	all
30500...	10 Birkenhead, Ordinary	all
30000...	10 Ditto, 6 per cent. Preference	all
900000...	2 Brazilian Street Railways	all
92800...	10 Brisbane [L]	all
450000...	10 Bordeaux Tram & Omnibus [L]	all
250000...	10 Calcutta [L]	all
32000...	10 Chester [L]	all
240000...	10 Dublin	all
146900...	10 Edinburgh Street Tramways	all
350000...	10 Glasgow Tramway & Omn. [L]	all
100000...	10 HughesLoco. and Tram. works	all
75000...	10 Hull Street Tramways	all
75000...	10 Imperial [L]	all
340000...	10 Liverpool Unit. Tram & Om. [L]	all
250000...	10 London [L]	all
150000...	10 London Street Tramways	all
600000...	10 North Metropolitan	all
90000...	10 Nottingham and District [L]	all
159470...	10 Provincial [L]	all
60000...	10 Sheffield	all
50000...	10 Southampton	all
80000...	10 Sunderland [L]	all
100000...	10 Swansea [L]	all
120000...	10 Tramways of France [L]	all
165000...	10 Tramways of Germany [L]	all
100000...	10 Nevada Land and Cattle	all
400000...	5 Tramways and Gen. Works [L]	all
250000...	10 Tramways Union [L]	all
73000...	10 Vale of Clyde	all
73000...	10 Wolverhampton [L]	all
MISCELLANEOUS.		
Shares.	Company.	Paid.
100...	Anglo-American Brush	10 0 0
100...	Ditto do.	10 0 0
50...	Lon. & Glas. Engin. & Iron Ship	25 0 0
100...	Maxim-Water Electric	1 10 0
100...	Nevada Land and Cattle	1 10 0
100...	Nobel's Explosive [L]	10 0 0
500...	Swan United Electric	10 0 0
12...	Tel. Con. & Maintenance [L]	12 0 0
100...	United Asbestos	10 0 0
100...	Young's Paraffin Light & M.O.	10 0 0
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